

PROCEEDINGS
OF THE
SECOND NATIONAL CONFERENCE
ON CITY PLANNING
AND THE
PROBLEMS OF CONGESTION

ROCHESTER, NEW YORK

MAY 2-4, 1910



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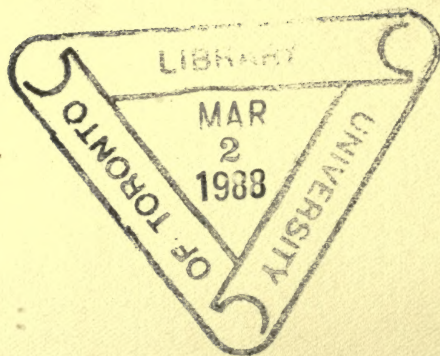


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BOSTON : MCMX



THE UNIVERSITY PRESS, CAMBRIDGE, MASS., U. S. A.

EDITORIAL NOTE

FOR many reasons it has seemed best to the committee on publication of the proceedings that the papers should be presented, save in one or two instances, in shortened form. Some of the papers have lent themselves to this treatment more readily than others, but in all the effort has been to eliminate only explanatory or introductory matter, and it is hoped this effort has been successful.

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1909-1910

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CHARLES S. HOWE, Pres. Case School of Applied Science, Cleveland, O.

A. PRESCOTT FOLWELL, Editor Municipal Journal and Engineer, New York City.

At the FIRST NATIONAL CONFERENCE it was resolved:

“That a Committee be formed to arrange for a more complete National Conference on City Planning and the Congestion Problem, to be held in 1910, and to submit to the conference a well-considered project of organization for developing comprehensive city planning in America, and that the committee consist of representatives of the following organizations:

COMMITTEE ON CONGESTION OF POPULATION IN NEW YORK,
AMERICAN INSTITUTE OF ARCHITECTS,
AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS,
LEAGUE OF AMERICAN MUNICIPALITIES,
AMERICAN CIVIC ASSOCIATION,
NATIONAL CONFERENCE OF CHARITIES AND CORRECTIONS,

and such callers of this conference as will serve on the committee, with power to add to their number.”

MEMBERS OF CONFERENCE

ARMSTRONG, J. A.	% Arnold Brunner, Union Sq., New York.
ATTERBURY, GROSVENOR	20 W. 43rd Street, New York, N. Y.
BARTLETT, DANA W.	Housing Commission, Los Angeles, Cal.
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COMEY, ARTHUR C.	Supt. of Parks, Utica, New York.
CRAWFORD, ANDREW WRIGHT . .	Associate City Solicitor, Philadelphia, Pa.
DAHLMAN, JAMES C.	Mayor, Omaha, Neb.
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FEISS, PAUL L.	Chamber of Commerce, Cleveland, Ohio.
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FORD, FREDERICK L.	City Engineer, Hartford, Conn.
FORD, GEORGE B.	Architect, % Geo. B. Post & Sons, New York.
FORBES, ELMER S.	Boston, Mass.
GLENN, JOHN M.	Russell Sage Foundation, 105 E. 22nd Street, New York.
GANNETT, MARY T. L.	Rochester, New York.
GOSS, R. H.	Minneapolis Journal, Minneapolis, Minn.
GRANT, ARTHUR H.	Editor American City, New York.
GRIMES, E. L.	City Engineer, Troy, New York.
HARTMAN, EDWARD T.	Secretary Massachusetts Civic League, Boston, Mass.
HAYES, HOWARD	% Corporation Counsel, Chicago, Ill.
HOOKE, GEORGE E.	Secretary City Club, Chicago, Ill.
HEISKELL, J. N.	Editor Arkansas Gazette, Little Rock, Ark.
HYNES, J. P.	Toronto Civic Guild, Toronto, Ont.
HALDEMAN, B. A.	Board of Survey, Philadelphia, Pa.
HOWE, FREDERICK C.	1844 East 86th Street, Cleveland, Ohio.
IHLDER, JOHN	Secretary Municipal Affairs Commission, Grand Rapids, Mich.

MEMBERS OF CONFERENCE

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KENT, EDWARD A.	Buffalo, New York.
LEWIS, NELSON P.	Board of Estimate & Apportionment, New York.
MILLER, LESLIE W.	School of Industrial Art, Philadelphia, Pa.
MEINER, FELIX	Leipzig, Germany.
MULFORD, F. L.	Supt. of Parks, Harrisburg, Pa.
MOODY, C. A.	Los Angeles, Cal.
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NOLEN, JOHN	Harvard Square, Cambridge, Mass.
OLMSTED, FREDERICK LAW	American Society of Landscape Architects, Brookline, Mass.
PRATT, E. E.	New York School of Philanthropy, N. Y.
POND, BREMER M.	Cambridge, Mass.
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SHURTLEFF, A. A.	84 State Street, Boston, Mass.
SMITH, Hon. EDWARD L.	Mayor, Hartford, Conn.
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WRIGHT, HENRY C.	Russell Sage Foundation, New York.
WATROUS, RICHARD B.	Secretary American Civic Association, Washington, D. C.
WEBSTER, G. S.	Board of Survey, Philadelphia, Pa.
WHITING, E. C.	Pittsburgh, Pa.
WADSWORTH, GEORGE R.	19 Congress Street, Boston, Mass.

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**CITY PLANNING CONFERENCES IN
THE UNITED STATES**

CITY PLANNING CONFERENCES IN THE UNITED STATES

THE first conference on city planning and the problems of congestion was held at Washington in May, 1909, at the call of the very energetic New York committee on congestion of population. Before this date much had been written on the need for city planning in the United States, some cities had been aroused, and some city plans made, but the meeting at Washington was the first formal expression of the interest in the subject. Held in the federal capital, the conference attracted the attention of senators and representatives, and the President showed his interest by consenting to make the opening address. A congressional committee thought the proceedings of merit enough to have them printed as a government document and the record may be found in Senate Document No. 422 of the Sixty-first Congress, Second Session.

The enthusiasm manifested at the Washington meeting was not that over a new plaything, but was lasting enough to induce a group of very busy men to devote much time to the organization of the second conference at Rochester in May, 1910. These men, confident in the widespread interest in city planning, but realizing that some of the problems were already efficiently attacked by existing organizations and by groups of individuals, reported at the Rochester conference against another separate permanent organization with expensive machinery, but advised the holding of annual conferences in which all organizations contributing to the development of the science of city planning might have a part.

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[To defray the expense of these conferences, which is considerable even with the simplest organization and with the free contribution of much time and effort on the part of the committee in charge, a subscribing membership fee of five dollars was unanimously voted by the forty-three members present. At the business meeting of the Rochester conference, and by the contributions of the same men whose sacrifice of time and effort had made successful two conferences, the publication of the proceedings of the Rochester conference was made possible.

The little nucleus of membership fees, even with the most generous contributions of a few individuals, has proved sufficient to provide but a very limited edition of the proceedings, and in order to secure a wider publicity, and to insure annual conferences of increasing efficiency, a stronger financial support is necessary.

The General Committee has organized, has appointed an executive committee and chairmen of sub-committees, and the sub-committees are at work with a view of bringing forward real contributions to the advancement of the subject at next year's conference. The Executive Committee is as follows:

Chairman of the General and Executive Committee: **FREDERICK LAW OLMSTED**, *Charles Eliot Professor of Landscape Architecture, Harvard University.*

Vice-Chairman of the General Committee and Chairman of the Committee on Street Planning: **NELSON P. LEWIS**, *Chief Engineer Board of Estimate and Apportionment, New York City.*

Chairman of Committee on Public Buildings, Open Spaces and Waterways: **JOHN M. CARRÈRE**, *Fellow American Institute of Architects, New York City.*

Chairman of Committee on Traction Lines, Railroads, and Docks: **GEORGE E. HOOKER**, *Secretary City Club, Chicago, Ill.*

Chairman of Committee on Legal and Administrative Methods: **ANDREW WRIGHT CRAWFORD**, *Associate City Solicitor, Philadelphia, Pa.*

Chairman of Committee on Buildings in Relation to the Street and Site: **LAWRENCE VEILLER**, *Secretary and Director National Housing Association, New York.*

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Chairman of Committee on Municipal Real Estate Policies: FRED-
ERIC C. HOWE, *Member of the Board of Realty Assessors,*
Cleveland, Ohio.

Chairman of Committee on Taxation: HON. LAWSON PURDY, *Presi-*
dent Board of Taxes and Apportionment, New York City.

Member at Large: FREDERICK L. FORD, *City Engineer, Hartford,*
Conn.

Only those who have a real interest in the solution of the city planning problems will be expected to join the conference, and since this number is comparatively small it is hoped that all who believe that the science of city planning needs development, and that annual conferences will be a most important aid in this development, will do their part by becoming subscribing members. The Secretary will be glad to give any further information.

Address: FLAVEL SHURTLEFF, *Secretary, 19 Congress*
Street, Boston.

REPORT OF THE COMMITTEE ON FUTURE ORGANIZATION

TO THE SECOND NATIONAL CONFERENCE ON CITY PLANNING AND THE PROBLEMS OF CONGESTION.

YOUR committee begs to report as follows:

The vote of the preceding conference under authority of which your committee was appointed, directed the committee to submit to the present conference a well-considered project of organization for developing comprehensive city planning in America.

Your committee finds that the proper scope and limitations of the subject are as yet so ill-defined in the minds of those most interested in it that any attempt to crystallize the movement into a permanent and fixed organization with a statement of objects heading a formal constitution and by-laws is exceedingly difficult at best, and if attempted at the present time would probably prove premature and embarrassing.

Moreover your committee has been strongly impressed with the great interest which is now being taken in city planning and the amount of thought and study which is now being given to its many different aspects not only by individuals but by a number of existing organizations. Many of these are local, but others, including those represented officially on your general committee, are national or international in scope, and each from its own angle of approach or with regard to its own technical problems and upon its own initiative is contributing valuable and well-directed efforts to the advancement of the science and art of city planning. These organizations include a large proportion of the individuals towards whom we must look for

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the making of such advancement and at the same time include many others whose professional and official positions or whose business and personal connections are such as to make it very important to enlist their interest and their ability in the work. For these reasons your committee feels that any form of organization which this conference may establish should carefully avoid drawing from or weakening these spontaneous and vigorous activities of well-established bodies. It is clear, however, that there are certain functions to be performed which no existing organization is doing and which, in the nature of things, are not likely to be effectively performed by any existing organization. While serious technical study of city planning problems is being carried on in many parts of the field by individuals and by groups within existing organizations, there can be no question that an intelligent appreciation of the unity of the field as well as an immense stimulus to advance in all its parts is to be afforded by the sort of co-operation of which the present conference is an example.

Your committee feels that for the present, at least, such co-operation is likely to be more generally and cordially given by the existing organizations and the individual members thereof if it is permitted to be of the informal sort that is represented in the present conference than would be the case were a new and independent full-fledged association to be established, that would make another demand for support and loyalty upon people already overburdened with memberships in existing associations of not entirely dissimilar aims. For example, the American Civic Association is organized largely for the express purpose of collecting and disseminating information and for carrying on popular propaganda in respect to the improvements of the physical conditions of urban life for which it is the aim of city planning to shape the whole framework. Again from a more technical standpoint the American Society of Municipal Improvements is devoted exclusively to such improvements in the physical conditions

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of city life. The Committee on Congestion of Population in New York, though local in name, is making studies and doing work that is more than national in its interest, because of the opportunity which is afforded to study such problems in that type and exemplar of congested conditions. The National Housing Association is admirably organized to work upon a topic intimately related to the whole subject. The American Institute of Architects, the American Society of Landscape Architects, and other professional bodies, through committees and otherwise, are active from their several points of view.

What your committee believes most to be needed at present that is not already well supplied, is a common form for discussion and study of the subject from *all* these points of view, an impartial, humble, and colorless instrument for assisting in the search for the truth, which all of these organizations and individuals are anxious to get at in order that they may apply it in the various ways which most appeal to each of them.

To this end your committee recommends, for the present, merely a very simple organization for continuing these conferences, with certain developments suggested by this year's experience. Appended to the report is a series of proposed votes which will be submitted successively to the conference for such action as it may see fit.

PROCEEDINGS ON THE ADOPTION OF THE REPORT OF THE COMMITTEE ON FUTURE ORGANIZATION

AFTER the reading of the report of the committee it was voted that the report be adopted unanimously. The following votes as suggested in the report were then passed:

1. That the present general committee together with such additional members as may be chosen at this meeting be continued, with power to add to their number.

2. That the general committee be directed to hold a meeting during the present month, at the call of the present chairman of the executive committee, who shall act as chairman pro tem., to organize by the election of a chairman and the formation of an executive committee of not less than five, and of committees on various subjects or subdivisions of the field of city planning such as the following:

A committee on traction lines, railroads, and docks.

A committee on design of streets.

A committee on the location of public grounds and buildings.

A committee on legal and administrative methods for the preparation of plans for streets and other public properties, for their revision and for their enforcement.

A committee on taxation in relation to city planning.

A committee on regulations governing the height, volume, or distribution of buildings upon private property or the degree of concentration of people thereon.

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3. That the general committee or the executive committee acting for it have power to alter, increase, or reduce the above list of committees, and that selections of members be made, so far as practicable, with a view to their geographical proximity to each other in order to facilitate meetings.

4. That each of the special committees keeping in consultation with the general executive committee, and acting, so far as concerns any public announcement of intention, only with the approval of the executive committee, shall consider the subject assigned to it, make arrangements at the earliest practicable date to have suitable topics of discussion under that subject prepared for presentation to the next conference, and in general take charge of the discussion of that subject at the next conference.

5. That the executive committee keep in touch with the deliberations of the several special committees and keep them sufficiently in touch with each other by correspondence and by general meetings when necessary, and that it fix the time, place, and other arrangements for a third conference to be held during the year 1911.

6. That it is desirable to establish a subscribing membership in order to provide for the expenses incidental to the conduct of the conferences.

7. That it is desirable that the principal paper in each subdivision should be printed and sent in advance to all the conferees in order that the time at the conference may be saved for discussion.

8. It is the sense of the conference that the session should occupy three days.

9. It is the sense of the conference that the name should be shortened by the omission of specific reference to congestion of population.

10. It is the sense of the conference that the name should be changed from "National Conference on City Planning" to "American Conference on City Planning."

The following votes were also passed:

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1. That the suggestion made by George E. Hooker, secretary of the City Club, Chicago, be referred to the executive committee.

2. That the conference expresses gratitude to the Chamber of Commerce and to the City Improvement Association of Rochester who have so royally entertained the conferees, and to the Russell Sage Foundation whose financial assistance has helped to make the conference possible, and to the newspapers of Rochester in whose columns the doings of the conference have been given so much publicity.

3. That the following members be added to the general committee:

GEORGE E. HOOKER, Secretary, City Club, Chicago, Ill.
LAWRENCE VEILLER, Secretary and Director, National Housing Association, New York.

FREDERICK C. HOWE, Board of Realty Assessors, Cleveland, Ohio.

WARREN H. MANNING, Landscape Architect, Boston, Mass.

GEORGE R. WADSWORTH, Consulting Engineer, Boston, Mass.

HENRY C. WRIGHT, Russell Sage Foundation, New York.

NELSON P. LEWIS, Chief Engineer, Board of Estimate and Apportionment, New York City.

JOHN NOLEN, Landscape Architect, Cambridge, Mass.

ANDREW WRIGHT CRAWFORD, Associate City Solicitor, Philadelphia, Penn.

JOSEPH W. SHIRLEY, Chief Engineer, Baltimore Topographical Survey, Baltimore, Md.

JOHN M. CARRERE, Fellow American Institute of Architects, New York.

GEORGE R. WEBSTER, Chief Engineer, Board of Survey, Philadelphia, Pa.

INTRODUCTORY ADDRESS ON CITY
PLANNING.

INTRODUCTORY ADDRESS ON CITY PLANNING

FREDERICK LAW OLNSTED

Charles Eliot Professor of Landscape Architecture, Harvard University

THIS subject of City Planning, which we come hither to discuss in some of its varied aspects, is no recent development. There is hardly one of its principal phases that has not been represented as a practical art ever since cities themselves began to be; and as a science, as a subject for theoretical discussion, it is probably but little less ancient. Yet such a conference as this is a new sort of thing, and there is something new about the subject to-day to account for such a conference. This new thing is a growing appreciation of the close and vitally important interrelations between these varied lines of activity; of the profound influence which activities carried on in one part of the field and with a view to one set of purposes may have upon the conditions in another part of the field.

The complex unity, the appalling breadth and ramification, of real city planning is being borne in upon us as never before, and one of the main purposes of such a conference as this, I take it, is to assist workers in all the different parts of this complex field to understand these interrelationships more clearly. The idea of city planning is one in which all these activities — all the plannings that shape each one of the fragments that go to make up the physical city — shall be so harmonized as to reduce the conflict of purposes and the waste of constructive effort to a minimum, and thus secure for the people of the city conditions adapted to their attaining the maximum of productive efficiency, of health, and of enjoyment of life.

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We are dealing here with the play of enormously complex forces which no one clearly understands and few pretend to; and our efforts to control them so often lead to unexpected and deplorable results that sober-minded people are often tempted to give up trying to exercise a large control, and to confine themselves to the day's obvious duty and let these remoter matters take their course.

And it is true that some sort of shifting equilibrium is sure to be reached in any case. Congestion, like most other evils, is self-limited. After congestion of population and the attendant ills reach a certain point (as they must have done in a good many mediæval towns), the increasing death rate and the decreased attraction of town life owing to the misery offsetting its advantages must check any further increase, must produce an equilibrium.

Or take the simpler case of local congestion of street traffic: when with increasing congestion at any point the loss of time and other objections to passing through that point become so great as to neutralize the advantages to be gained by enduring them, the limit has been reached and additional people will cease to go there; other centers of concentration will tend to be developed, having relatively greater advantages and less tendency to become congested, and the congestion at the original center will tend to decline. Some fifty years ago one of the downtown street corners in New York became so congested and the congestion tended to so increase that it was felt to be quite intolerable. The city prepared plans for bridges, to carry foot passengers across the streets from sidewalk to sidewalk, and it was generally regarded as inevitable that some such grade separation should be made. But the congestion had become so great that teamsters and others found it more convenient to go elsewhere; business readjusted its habits; and presently the intolerable trouble was found to have cured itself.

To take an illustration from another field. There has been much concern for some years in Massachusetts over the tendency to rapid increase and congestion of population

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among the offspring of a certain class of very undesirable immigrants from Europe. Through an exercise of the police power, more ruthless than has been attempted even by the Indiana advocates of eugenics, the State has endeavored to put an arbitrary check upon the propagation of this undesirable class. The immigrants referred to, I ought to explain, are the European gypsy moths. In localities where they have been unchecked by man for a few years at a time they have so increased in numbers as to strip all the summer trees as bare as midwinter throughout large tracts of woodland, and by repeating such attacks have completely killed great numbers of trees. Where such congestion occurs the individual caterpillars making up the nauseous horde through lack of food become smaller and feebler and starve to death in great numbers. It is obvious that they could not advance to undespoiled territory on which to feed; they would in a year or two become extinct. If man and other enemies could keep out of the fight entirely, it is presumable that an equilibrium would be reached at about the point where there were just enough trees left alive in the country to feed the moths, and any further increase in the moths would so reduce the food supply as to check reproduction. In reality the other enemies of the moth make it probable that equilibrium will be reached somewhat short of that point, as it has been in Europe where the moth is a very troublesome pest but trees are still quite numerous.

To interfere with these complex natural forces, to attempt as we are doing to infect the moths with imported parasites of whose action we may be only half aware, is to get into very deep waters; it may involve a good many mistakes and may lead only to an unstable equilibrium, perhaps to one that is unexpected and undesired. An equilibrium of some sort is all that can be expected anyhow. Therefore, why not sit back and wait for the natural equilibrium of the matter, of their food and of their enemies, and then get used to it?

That is the comfortable, pious, stand-pat attitude; it saves a lot of mental effort and anxiety, it leaves more time

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for attending to the immediate duties and pleasures of life, and not seldom it leads to just as good results as to contest every step of the way with the half-understood forces that determine the outcome.

This is the old attitude in regard to the larger and more complex problems of what we now refer to as City Planning. But mankind will not be content with such an attitude after the imagination has grasped the larger possibility of control.

We cannot be content to let the free interplay of economic forces and social impulses pile up the evils contingent upon city life unchecked until a state of equilibrium is reached like that of the gypsy moths, in which the evils shall have become so great that the people can endure no more and continue to increase. Nor, when we fight these evils singly and begin to see here and there a part of the complex interwoven web of cause and effect that binds them all together with the things that make city life desirable, can we, as intelligent beings, fail to pluck at the web and try as best we may to untangle it, and begin to ask, each one of us in his own corner, "Will my cutting away of old threads and my building up of new hinder or help my brother who is working at some other tangle in his part of the field?"

But in addition to thus illuminating the connections which link the planning of all the diverse elements of the physical city together, and to thus giving each of us a more intelligent understanding of the purposes and principles controlling work in the less familiar parts of the field, such conferences as the present ought to open the way for substantial advances in each one of the subdivisions of the field, through better knowledge of facts, through clearer definition of purposes, and through improvements of technique.

It is plainly impossible at any one conference to deal with City Planning in any but a superficial or a fragmentary way; and as most of us have already obtained a good speaking acquaintance with the more important generalities that can be uttered on the subject, we come here mainly, I sup-

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pose, to exchange information about specific live questions with which we happen severally to have been brought into responsible contact. Yet in order that the larger relations may be kept in view, it has seemed best to include one general introductory paper, and I have been chosen as the instrument to rehearse what may be to many of you but familiar generalities.

City Planning may conveniently be considered under three main divisions.

The first concerns the means of circulation, the distribution and treatment of the spaces devoted to streets, railways, waterways, and all means of transportation and communication. The second concerns the distribution and treatment of the spaces devoted to all other public purposes. The third concerns the remaining or private lands and the character of developments thereon, in so far as it is practicable for the community to control or influence such development.

Facility of communication is the very basis for the existence of cities; improved methods of general transportation are at the root of the modern phenomenon of rapid city growth; and the success of a city is more dependent upon good means of circulation than upon any other physical factor under its control.

Moreover, the area devoted to streets in most cities (excluding those regions that are still undeveloped) amounts to between twenty-five and forty per cent of the whole, and the improvement and use of all the remainder of the city area, both in public and in private hands, is so largely controlled by the network of subdividing and communicating streets, that the street plan has always been regarded as the foundation of all city planning. Indeed until recently in the minds of most public men in America general planning applied to cities has included nothing but the streets. But even as to streets, plans drawn primarily in the interest of easy communication, with a view to the common welfare of all the citizens, and by agents responsible for them, have been unusual.

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It is an interesting consideration that most of the street planning in America, and until recently in Europe, has been done from the proprietary point of view. Nearly all new city and town sites that have been deliberately planned at all, have been planned by or for the proprietors of the site, largely with a view to successful immediate sales. Regard for the remoter interests of the community has commonly been dictated more by an optimistic opinion of the intelligence of prospective purchasers than by a disinterested desire to promote their future welfare. I do not mean to suggest that William Penn and his surveyors in laying out the original plan of Philadelphia consciously sacrificed the interests of its future inhabitants for the sake of their own convenience and profit in laying out and disposing of the property, or that Washington and Jefferson and Major L'Enfant and their associates in preparing the plans for the Federal City and putting the land thereof upon the market were consciously so influenced. I merely mean to call attention to the fact that the original layouts of practically all our cities and most of the "additions" thereto, except those which grew up without definite plans along lines developed to meet the temporary convenience of their inhabitants, have been drawn up by or for the original proprietor. Naturally where the proprietor or his agent has been enlightened and wise, even with a selfish enlightenment, the results have been relatively good for the community, and where he has been short-sighted and ignorant and mean in his selfishness the results have been bad; but the proprietary point of view must have colored and narrowed the outlook of the designers throughout. Moreover, the methods, traditions, and habits created in this school have inevitably dominated in large measure those official street-planning agencies which the people of some cities have subsequently established with the purpose of exercising a control in the interest of the whole community over the street layouts of individual proprietors.

It is to be noted further that the ruts in which the plan-

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ners of street plans have generally been running in America were deeply worn before the beginners of modern revolution in means of transportation, dating from the introduction of metal rails and the development of the steam engine. Yet that revolution has been made by such moderate successive steps, and the men to whom the improved transportation is due have so seldom had any responsibility for street planning, and have so generally had their attention absorbed in the immediate practical problems, getting improved means of transportation as easily and cheaply as they could under the actual conditions which they found confronting them, that street planning has gone along in the same old routine way, and each improvement in the means of urban transportation has been fitted to the old Procrustean bed of the street planner.

Steam railroads, it is true, developing as they did mostly in the open country, early began to learn the extent to which their efficiency depended upon a standard as to ease of curvature and lightness of gradient that put their planning in a wholly different category from that of the old type of thoroughfare; and somewhat more slowly they began to learn the importance of a complete separation from other kinds of traffic even at crossings. Although in the earlier days the existing streets were often used by the railroad in entering or passing through a town, as in the familiar cases along the New York Central, the tendency became gradually stronger to disregard the hampering streets and lay out steam railroads, even in cities, upon functional lines suitable to great long-distance thoroughfares operated at high speed. This divorce meant a great improvement as to the railroads, but it left the street system to stagnate in the old ruts, and tended to a total disregard of the relation between the streets and the railroads as distinct but complementary parts of one system of circulation.

But if the long-distance and suburban steam railroads thus divorced themselves from the antiquated methods of the street planners, all other improved means of transit have

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been as a rule bound hand and foot by them. Horse cars, mechanically propelled street cars of all sorts, and rapid transit railways, whether above or below the street grade, have generally been limited to streets laid out on plans that embodied scarcely any features that had not been common in city street plans for many centuries. The one important exception was that the average width of street became greater. The routes which transit lines have had to follow have often been full of angular turns, have seldom been well distributed in relation to the area and the population, and in the case of surface lines have been encumbered by a large amount of general vehicular traffic for which adequate provision separate from the car tracks has been lacking.

It has thus been the tendency of street planners, whether acting for the city or for landowners, to give inadequate attention to the need of the public for various types of main thoroughfares laid out with sole regard to the problems of transportation, and to permit the supposed interests of landowners and fear of heavy damages to limit the width of thoroughfares and force them out of the best lines in order to conform to the owners' preferences as to land subdivision — usually conforming to a gridiron plan. But at the same time there has been, on the other hand, a decided tendency on the part of official street planners to insist with a quite needless and undesirable rigidity upon certain fixed standards of width and arrangement in regard to purely local streets, leading inevitably in many cases to the formation of blocks and lots of a size and shape ill adapted to the local uses to which they need to be put. The typical instance of the latter tendency is that of insisting on wide blocks and deep lots in a district occupied by people whose rents must be low and accommodations correspondingly limited; narrow, deep, dark buildings or rear tenements or both are the almost inevitable economic result. Another instance is that of fixing a minimum width of street and minimum requirements as to the cross section and construction thereof which makes the cost needlessly high for purely local streets, and thus inflicts

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a wholly needless and wasteful burden of annual cost upon the people.

Without more than alluding to the immensely important and complex relations between the railroad freight lines and terminals, the wharves, the water-ways, the sites for economical warehousing and manufacturing, and the street system, I can say in summary that there is great need of treating all the means of circulation in a city as a single connected system, and at the same time of recognizing clearly the differentiation of all its parts, so that each shall fit its function simply but without waste, from the biggest railroad terminal down to the smallest alley.

The second main division in City Planning is a very miscellaneous one, including all the public properties in a city not used primarily for circulation; but they may be grouped for our purposes into three principal classes.

The first class may be called that of central institutions, serving the whole city and requiring for convenience a comparatively central position; such as the city hall and the head offices of public departments and services municipal and otherwise, the public library, museums, central educational establishments, and the like, together with the grounds appurtenant to them. Functionally it is important to class with these as far as practicable similar institutions of a quasi-public sort, even though owned and operated by private individuals or corporations, such as the leading establishments devoted to public recreation, dramatic, musical, and otherwise, with a clientele covering the whole city. One of the greatest needs in regard to all matters of this sort is the application of intelligent effort to the grouping of such institutions at accessible points in so-called civic centers for the sake of convenience and of increased dignity and beauty.

The second class consists of institutions serving limited areas and therefore needing to be repeated in many different places throughout the city. Such are schools, playgrounds, gymnasias and baths, branch libraries, branch post offices,

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police stations, fire-engine houses, district offices and yards of the department of public works and other public services, neighborhood parks and recreation grounds, voting places, public and quasi-public halls and social centers, and so on, including in the same class, so far as practicable, the local institutions conducted by private organizations, such as churches. The most notable thing about this class of institutions is that, while most of them belong to the city and are therefore entirely under the city's control as to location and character, the selection of sites is ordinarily determined by separate departments without the slightest regard to the selections of other departments or the possibilities of economy, convenience, and æsthetic effect that might result from combination or grouping. Even in the separate departments it appears to be a rare exception that any considerable degree of comprehensive foresight is exercised in selecting sites with a view to economy of purchase or to securing a convenient and equitable distribution.

We shall not have intelligent city planning until the several departments responsible for the selection of sites for all the different public purposes of a local character get together in laying out a general plan and method of securing such sites, forming in many cases local civic centers in which the respective neighborhoods can take pride.

We must come, I believe, to a full acceptance of the principle, now well established in some of the German states, that when any tract of land in or adjoining a city is opened up for building purposes, not only the necessary streets must be set apart and dedicated to the public, but also all the other areas that will be required to meet properly and liberally, but without extravagance, all the public needs of that locality, when fully occupied, just so far as those needs can be foreseen by intelligent and experienced men. In no other way can the sites for these local institutions be placed so well or with so little economic waste.

The third class of public properties consists of many special institutions not demanding a central location but serv-

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ing more than a local need, such as hospitals, charitable and penal institutions, reservoirs and their grounds, large parks and outlying reservations, parkways, cemeteries, public monuments, and certain monumental and decorative features to be found in connection with open spaces that exist primarily for other purposes. In this class the opportunities for economy and better effects through combination and grouping of sites are not so numerous, and what seems to be most needed is a more far-sighted regard for the relation of each of these important institutions to the probable future distribution of population and to the main transportation routes. In every case the adaptability of the site to its particular purpose needs to be considered with the best of expert advice, but in addition those which occupy considerable areas, like the large parks and cemeteries, need to be considered from a double point of view, as obstructions to the free development of the street and transit systems and as places to and from which large numbers of people must be carried by those systems.

The third main division of the lands within a city, consisting of all that remains in private ownership, is subject to public control chiefly in three ways.

The street plan absolutely fixes the size and shape of the blocks of land, and hence limits and largely controls the size and shape of individual lots and of the buildings which can be most profitably erected upon them.

The methods of taxation and assessment greatly influence the action of landowners, and of those having money to invest in land, buildings, or building mortgages. They have a direct influence upon the speculative holding of unproductive property; upon the extent to which development is carried on in a scattered sporadic manner, involving relatively large expense to the community for streets, transportation, sewerage, etc., in proportion to the inhabitants served; upon the quality and durability of building; and, in those states where property is classified and taxed at varying rates, upon the class of improvements favored. Exemption from taxa-

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tion for a certain period or other such bonus is a familiar device in some cities to encourage a desired class of developments, such as new factories.

But the chief means of planning and controlling developments on private property is through the exercise of the police power. The principle upon which are based all building codes, tenement-house laws, and other such interferences with the exercise of free individual discretion on the part of landowners, is that no one may be permitted so to build or otherwise conduct himself upon his own property as to cause unreasonable danger or annoyance to other people. At what point danger or annoyance becomes unreasonable is a matter of gradually shifting public opinion interpreted by the courts.

The first object of building codes and of the system of building permits and inspections through which they are enforced is to ensure proper structural stability. A second object is to reduce the danger of fire to a reasonable point. A third object is to guard against conditions unreasonably dangerous to health. Tenement-house laws, factory laws, and other special provisions operating in addition to the general building code of a city are directed mainly toward the protection of people using special kinds of buildings against unhealthful conditions and against personal risk from fire and accident. Buildings are classified according to the purposes for which they are used, according to their location with respect to arbitrary boundaries (such as "fire limits"), according to the materials of which they are built, and in dozens of other ways; and for each class minute and varied prescriptions and prohibitions are made which in the aggregate play an important controlling part in determining the size, height, purposes, plan, general appearance, and cost of building which the owner of any given lot can afford to erect within the law. While these regulations are intended only to guard against the evil results of ignorance and greed upon the part of landowners and builders, they also limit and control the operations of those who are neither ignorant

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nor greedy; and it is clear that the purpose in framing and enforcing them should be to leave open the maximum scope for individual enterprise, initiative, and ingenuity that is compatible with adequate protection of the public interests. Such regulations are and always will be in a state of flux and adjustment, on the one hand with a view to preventing newly discovered abuses, and on the other hand with a view to opening a wider opportunity of individual discretion at points where the law is found to be unwisely restrictive.

It is to be hoped that with increasing precision and scope of knowledge these regulations will become more and more stable. Especially in regard to structural stability it will certainly become possible, with improvements in the scientific basis for the regulations, to ensure the needful strength with a much smaller margin of wasted material and money than is now demanded to cover the vague doubt of the public authorities as to what the safe limit really is. So also in regard to the important detail of plumbing regulations, it seems likely that the future will bring a simplification and lessening of the present costly requirements rather than increased stringency. It is different with the regulations which have the most important effect upon the heights and widths and general plan of buildings, upon their relations to each other and to the streets, and thus upon the whole fabric of the city plan. These regulations are among the newer additions to the building laws; they are as yet tentative, unsystematic, half-hearted, and based upon no adequate recognition of the evils to be met. It is therefore likely that in this field there will be numerous changes for some time to come, and a tendency to much more radical requirements. The amount of light entering any given window in a city, and up to certain limits the amount of air, is dependent mainly upon the distance to the next opposite building wall and the height thereof above the level of the window. An examination of the building codes and tenement-house laws of thirty-five American cities shows a confusing diversity in the regulations limiting building heights and horizontal spaces to be left open,

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and there are some cities in which there is practically no effective regulation at all.

A most profitable and fertile subject for study and discussion in this part of the field, to which some attention will be given at this Conference, is that of the zone or district system of building regulations, under which the outcome of unrestrained economic competition in producing tall crowded buildings with badly lighted lower stories is recognized and accepted to a certain degree in the central parts of a city, but increasingly better standards of light and airiness are fixed in the outer regions where congestion has not yet progressed so far.

As to the influence of methods of taxation in determining the physical improvements undertaken on private property it will be enough here to cite a single example. In Pennsylvania the law provides for a classification of land as agricultural, rural, and urban, of which the second is taxed twice as much as the first in proportion to its value, and the third three times as much as the first. As applied within city boundaries, vacant fields held for speculative purposes are commonly taxed as agricultural property. Under these circumstances the man who draws his savings out of concealed and untaxed intangible investments and builds a house is not only punished by a tax on the money he puts into his house, but is taxed two or three times as much on the land as his speculative neighbor who does nothing but play dog in the manger and wait for "unearned increment."

The principle of classifying taxable property and discriminating in rates is closely akin to the protective tariff system, and is plainly open to the same sort of abuse of special privilege, as instanced by the above example from one of the strongholds of Protection and of special privilege, but it is undeniably a convenient and useful means of controlling in the public interest certain things which it is impossible or undesirable to reach through the police power. There is now pending an amendment to the Massachusetts Constitution to authorize the legislature to permit such discriminatory taxa-

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tion. It is a very dangerous two-edged weapon. But so is nearly every weapon that is sharp enough to cut; the drafting and enforcement of building codes reek with graft where they are not under the intelligent scrutiny of an awakened public conscience; there is no means of advance that is guaranteed to be safe, painless, and untainted.

Bound up with the effect of taxation upon the physical constitution of cities, upon housing conditions and congestion, is the still more controversial subject of customs of land tenure; of the policy of long-term building leases with their great encouragement to new building on small capital as in Baltimore, and with their tendency to strangle any further improvements or changes as the term of the lease draws on; of the advantages and disadvantages and controlling conditions of the habit prevailing in many cities of home-ownership, and of the contrary habit elsewhere among people of the same standing of living in hired houses or tenements; of the relation of these habits to the desirable type of house and size of lot and of block in each city; of the co-partnership system of owning and leasing; of the position of the city as an active factor in the real estate market; of municipal tenements and municipal cottages; and so on. No thorough discussion of congestion or of city planning in the broad sense can long avoid such questions as these, and to take them up means touching some very live wires.

I have outlined in a fragmentary sort of a way the three main divisions of the city planning, dealing respectively with the lands devoted to the means of public circulation, the lands devoted to other public purposes, and the lands in private ownership. Within all of these divisions the actual work of city planning comprises the following steps: a study of conditions and tendencies, a definition of purposes, a planning of physical results suitable to these purposes, and finally the bringing of those plans to execution through suitable legal and administrative machinery. Every one of those steps of progression is vital, every part of the three main divisions of the field is important. At this

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conference several parts of the field will be touched upon, and they will be considered sometimes from the point of view of one step of progression, sometimes from another. I hope that these very general and superficial remarks of mine may help to make clearer the relationship between the apparently diverse matters that will be discussed.

In all that I have said you may have noticed the absence of any reference to beauty in city planning; that is because I want in closing to emphasize the relation which it bears to every phase of the subject from beginning to end.

The demands of beauty are in large measure identical with those of efficiency and economy, and differ merely in demanding a closer approach to practical perfection in the adaptation of means to ends than is required to meet the merely economic standard. So far as the demands of beauty can be distinguished from those of economy, the kind of beauty most to be sought in the planning of cities is that which results from seizing instinctively with a keen and sensitive appreciation the limitless opportunities which present themselves in the course of the most rigorously practical solution of any problem for a choice between decisions of substantially equal economic merit but of widely differing æsthetic quality.

Regard for beauty must neither follow after reward for the practical ends to be obtained nor precede it, but must inseparably accompany it.

In his admirable and inspiring book on "Town Planning in Practice" Raymond Unwin says:

"So long as art is regarded as a trimming, a species of crochet-work to be stitched in ever-increasing quantities to the garments of life, it is vain to expect its true importance to be recognized. Civic art is too often understood to consist in filling our streets with marble fountains, dotting our squares with groups of statuary, twining our lamp posts with wriggling acanthus leaves or dolphins' tails, and our buildings with meaningless bunches of fruit and flowers tied up with impossible stone ribbons."

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That puts the point negatively as well as it could be put. To state it positively is very difficult, but it is well suggested by an example used by my father many years ago in discussing village improvement.

“Let a thing be supposed, of greater bulk than the largest of our fine Fifth Avenue private habitations, to have been made for a mere common purpose of trade by the work of many men, not one of them ranking among artists, not one of liberal education, men not at all delicate, not nice-fingered, not often even clean-handed; muscular, sweaty, and horny-handed; no small part of them rude and clumsy in their ways, tobacco-chewing, given to liquor, slang, and profane swearing. Suppose the thing so produced to have no beauty of carving or color, to be mainly smeared black and white, and any touch of decoration upon it to be more than barbarously childish and clumsy.

“It can hardly be easy for those who represent what we have been more particularly gaining of late in æsthetic culture to believe that such can have given the world a thing of supreme beauty. It will be still harder to realize that the coarse, rude, sensual men producing it had in general a deep artistic sense of its characteristic beauty, so that they would protest in stronger terms than Mr. Ruskin ever used against the putting upon it of anything by which the rare refinement of it might be marred.

“Alas! that I must speak of this as of a lost art, for it is of the ‘Baltimore Clipper’ of fifty years ago, the like of which will never again be seen, I speak. . . .

“What is this admirableness, dependent on no single thing done for admiration, no decoration, no ornament, no color of splendor, of a sailing-ship?

“Whatever else it may be in the last analysis, it cannot be separated from this fact, that a fine clipper ship, such as we had in America just come to build and rightly sail, when the age of such things passed away, was as ideally perfect for its essential purpose as a Phidian statue for the essential purpose of its sculptor. And it so happened, in much

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greater degree than it can happen in a steamship, or in the grandest architecture, that the ideal means to this purpose were of exceeding grace, not of color, but of form and outline, light and shade, and of the play of light in shadow and of shadow in light. Because of this coincidence it was possible to express the purpose of the ship and the relation and contribution to that purpose of every part and article of her, from cleaving stem to fluttering pennant, with exquisite refinement.

“No writer, poet, or painter can ever have told in what degree it lay in a thousand matters of choice — choice made in view of ideal refinements of detail, in adaptation to particular services, studied as thoughtfully and as feelingly as ever a modification of tints on painter’s palette. One needed but a little understanding of the motives of seamanship to feel how in the hull every shaving had been counted, and how in the complicated work aloft every spar and cloth, block and bull’s-eye, line and seam, had been shaped and fined and fitted to do the duty required of it in the most sinewy way. These qualities, with the natural stateliness of the ship’s motion, set off by the tuneful accompaniment of the dancing waves, made the sailing-ship in its last form the most admirably beautiful thing in the world, not a work of nature nor a work of fine art.”

Let us hope that as time goes on our cities will grow increasingly in that beauty of fitness which made the sailing-ship so wonderful, and in this hope let us welcome every such effort at clearer understanding at the Conference now before us.

CAUSES OF CONGESTION OF POPULATION

CAUSES OF CONGESTION OF POPULATION

BENJAMIN C. MARSH

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New York City*

CONGESTION of population is primarily the result of protected privilege and exploitation, and must be dealt with largely as an economic problem and the result mainly of economic conditions. The first fundamental economic condition is the high cost of land. Taking an actual condition in many of our large cities with the land worth one dollar per square foot, or twenty-five hundred dollars for a lot comprising twenty-five hundred square feet, a rental for land based on a ten per cent gross return would amount to two hundred and fifty dollars per lot. The fair average of the workingman's wage is six hundred dollars for the year. He should not pay over one-fifth for rent, or one hundred and twenty dollars. If one-third of this rent is rent for land, this means forty dollars per year for land and eighty dollars per year for rent for buildings. Consequently there must be housed on each lot six families in round numbers or thirty persons, that is at a density of three hundred to the acre, including streets and counting only ten such lots available to the acre. If seventy per cent of the lot be covered by buildings, only seven hundred and fifty square feet of land would be left, or an average of one hundred and twenty-five feet for each family for garden and other purposes.

The vicious circle in congestion is as follows: Anticipated congestion of the population leads the prospective builder

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of a high tenement to pay at the rate of one to five dollars per square foot to the owner of the land. Having paid that price, the tenement owner claims it as his legal right to crowd people in the tenements. The assessor capitalizes the rentals of the congested lot and increases the assessed value of the lot upon which the landlord must pay taxes, and the landlord in turn claims this as an excuse for charging higher rents.

A low rate of wages is a second economic cause of congestion. An expenditure of one-fourth of the annual income would secure in the case of most unskilled wage earners only two good rooms, which results inevitably in the overcrowding of the family. The manufacturer has a just grievance if he is compelled to pay such wages as to secure his workmen adequate and proper housing on land which through its great value has made fortunes for the owner thereof. Wages should be reasonably high, but not high enough to pay the speculator in land his eternal profits. To claim this is to claim the right of the landowner to levy a perpetual tax upon industry and so ultimately upon the consumer.

The third economic cause of congestion of population is congestion of factories and offices. No city has ever yet evolved a transit system which would carry people to and from their work in buildings which multiply the acreage of a given block ten, twenty, and even twenty-five fold. Particularly if workers are obliged to work nine or ten hours a day they will, especially if factory employees, live comparatively near their work. This will result in an abnormal number of people to the acre. The enormous values of the sites of buildings is reflected in the equally abnormal values of the land within a radius of a half mile, or even a mile, used for tenements for the workers.

The fourth fundamental cause of congestion is the present speculative system by which large fortunes are made from land without any effort on the part of the holders, together with the present unjust system of municipal taxa-

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tion by which land and accumulated wealth escape a fair measure of taxation and people with small incomes are compelled to pay often out of an actual deficit a heavy proportion of their earnings in taxation for municipal purposes. The cost of municipal government runs from fifteen to thirty-seven dollars per family in many American cities on a normal and reasonable valuation of land and improvements. This means inevitable hardship, since it nearly represents the rent of at least a small room in certain sections of a city. Every dollar taken in taxation for local or state or federal purposes from families who are attempting to live on a deficit of one or two hundred dollars, means that those families are going to restrict their expenditures; and while shelter is the first object of their care and their expenditure, the amount and quality of their shelter is in no small measure determined by their expenditure for taxes.

The location of immigrants who are unable to afford American standards in the most expensive places to live, that is, in our great cities, is a most important cause of congestion of population. Many, if not most, immigrant families are unable to earn over five or six hundred dollars per year, and they need about eight hundred dollars if there be three children under working age. The tendency, or the economic impulse to congestion, combined with the racial or sectional desire on the part of those coming from the same sections abroad, to live together results in the crowding of three or more occupants into one room and fourteen to sixteen hundred people on to one acre, — conditions which are found in Boston, Chicago, and Philadelphia, as well as New York.

While these economic causes are fundamental, we must admit there are administrative causes which have been very important in producing overcrowding. Low standards of housing permitting of small yard areas and small floor space may be mentioned as the first of these administrative causes. In every city there is a limited district in which land values are at present so high that congestion is unavoidable. On

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the other hand, there is no reason why buildings, to contain in tenements even nine hundred people to the acre, or in offices and factories one thousand people to the acre, should be permitted in those sections of the city where land values are at present so low that reasonable space and ample rooms can be secured without any confiscation of property rights. The evils of to-day in congested districts will be duplicated in newer sections of every city unless action is taken.

The second administrative cause is the lack of supervision over living conditions. The idea that every man's house is his castle is too deep-rooted in our institutions, and we have carried this abhorrence of interference with personal liberty to an unwise extreme. With a low standard of living, no matter what the wages earned by the family, a too keen sense of thrift will impel them to huddle into rooms, and the consequent overcrowding can be prevented only by a more general supervision of living conditions than we have in America, but such as is provided for in foreign cities. The foreigner ignorant of the American language and of our laws may not know that three or four people are forbidden by law to sleep in a single room, and this fact is not stated so that he can be impressed. Neither have we in any American city to-day adequate regulations holding the landlord responsible for overcrowding and requiring the tenant to register any boarders or lodgers whom he takes in. There must be a marked extension of supervision to prevent this important cause of congestion.

In conclusion it may be noted that since the causes of congestion of population are economic and administrative, they are largely the outcome of a system of *laissez faire*; and although the discussion of means of preventing congestion is to be taken up by another paper, we may note, too, that to the extent to which the causes of congestion are economic the remedies must be economic, in so far as the causes are administrative they must be prevented by agents in administrative measures; and since congestion is primarily the result of protected privilege and exploitation, the police

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power of the state must be extended and enlarged to deal with those whose exploitation is in any way responsible for the evil of congestion, with all the human suffering, physical deterioration, and moral danger which congestion promotes and connotes.

IMMIGRATION AND CONGESTION OF POPULATION

HON. WILLIAM S. BENNET

Member of Congress from New York City

THAT the immigrant, using that word in the sense of the recently arrived alien, is in and of the congestion in cities none can deny. That the congestion exists is equally certain. That the immigrant causes congestion of, by, and because of himself is not proved.

Our study of congestion in the immigrant commission work covered ten thousand families in the cities of New York, Chicago, Philadelphia, Boston, Cleveland, Buffalo, and Milwaukee. In each city we took the localities recommended to us by sociological workers therein as the most congested, and, because of the money at our command, we were able to make the inquiry sufficiently exhaustive to determine to what extent actual congestion of the immigration population prevails; the cause of such congestion, whether peculiar to any particular race or races of immigration; and, generally, the economic status of the city-dwelling immigrant. When issued our report will comprise about six hundred pages of very valuable information. We found as bad conditions of overcrowding and congestion-as have ever been reported, but we did not find such cases numerous enough to be properly classed as typical.

The immigrant in congested cities represents to-day two classes,—the fugitive and refugee, such as the Armenian and the Jew, and the response to our own demand for some one to do the cheaper, rougher work which some one must do. In the sense that they are a response to that

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demand the immigrants are not responsible for the congestion of which they are a part. To the extent that they are there because, fleeing from impossible conditions, they come here poor, and necessarily live in the only place where they can afford to, they are not permanent factors in the congestion problem. The native intelligence and industry in such immigrants is such that they rarely remain long in the environment at the bottom. The immigrant who is in congested areas because of industrial conditions presents the chief problem. For some of our industries we have now drawn cheap labor successively from our own rural districts, Canada, and every country in Europe, and are now importing Portuguese from the Madeira Islands — half-breeds and negroes — for some of the New England industries. We have no new source of supply except in Asia and the Russian territory. Our institutions and traditions make impossible the growth or creation of a peasant class, but, apparently, make necessary the continual importation of foreign peoples to do the work which a peasant class does in European countries. The general diffusion of knowledge and the rapid extension of popular government are doing much to eradicate congestion in American cities. Even the newer arrival appreciates, though possibly vaguely, that congestion is not the best estate; and coming, as they do, from countries where the suffrage exists in some form they learn rapidly to express their views through their ballots. Fifty years ago the immigrant cared little about congestion. To-day his successor understands and deplors its evils and does much to mitigate them. We have the immigrant. We have the congestion. Neither is necessarily because of the other, and in any effort to reduce the evils of the latter we can count on much help from the foreigner.

CONGESTION AND ITS CAUSES IN CHICAGO

GEORGE E. HOOKER

Civic Secretary of City Club of Chicago

CONGESTION presumably means an undue density of people, whether in the place of occupation, the street, or the home. It may in each case consist in an undue number of people to a given amount of room space, as illustrated in the crowded workshop, street car, or living-room; or it may consist in an undue amount of enclosed room space to a given superficial area or level, as illustrated by the lot of which too large a portion is built over, or by a street crowded with cars and other vehicles; or it may consist in an undue number of occupied levels to a given lot or ground area, as illustrated by the excessively high office building or tenement house, or by multiplied lines of transit on, over, and under the street surface. Speaking roughly, the first form of congestion might perhaps be called room congestion, the second lot congestion, and the third sky congestion.

As to what degree of density constitutes congestion in each case, standards would naturally vary with different cities and with different parts of the same city. The standard which might be reasonable for Manhattan Island would not be so for Philadelphia or Chicago. The standards which might be permissible for Paris or Berlin would not be so for cottage-built Bremen or cottage-loving England. The standard which might be reasonable for the central area of each of these cities would not be so for its borders.

The cities of Continental Europe have established quite precise standards on this subject by their zone system for

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buildings and their seating requirements for cars. The zone system prescribes definitely and quite elaborately the proportion of the lot which can be covered, the number of stories which can be erected, and the character of the buildings permitted in each of the three to six irregularly shaped but so-called zones into which the city is usually divided for that purpose. The police rules usually forbid standing passengers in the aisles of street cars and forbid more than a fixed number on the platforms.

The building requirements of important cities in this country usually prescribe only the percentages of lots in different parts of the block which may be covered by buildings erected for several families each, the class of construction required from the point of view of fire risk, and perhaps the maximum height. These provisions, however, are the same for all parts of the city, save that the erection of wooden buildings is generally forbidden within a certain "fire" zone, and outside that zone the higher the dwelling erected, the more expensive may be the construction required. Thus although a city may contain millions of people and hundreds of square miles of territory, congestion can nowhere be compulsorily kept below the limit permitted in the most crowded part of the city, save as the more expensive "fire" construction required for high buildings may incidentally limit height. I know of no American community which prescribes and enforces limits to street-car crowding. American cities have thus developed only the rudiments of congestion regulation.

Chicago has a conspicuous example of congestion in places of occupation and congestion in the street. It has a less conspicuous example of congestion in the home.

I. *Congestion in Places of Occupation.* — Chicago business buildings may cover any or all of the lot, and, if fire-proof, be erected to a height of two hundred and sixty feet. Prior to 1902 the height limit was for a few years one hundred and thirty feet, there having previously been no limit.

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Exact statistics on the subject are not at hand, but it is probable that there is no business district of any city which exemplifies such a marked geographical concentration of the important social functions of a great community as does the downtown district of Chicago, nor one, aside from certain business districts in lower New York, which contains within so small an area an equal office and business population. Within an area of less than a square mile there are found the railway terminals and business offices, the big retail stores, the wholesale and jobbing business, the financial center, the main offices of the chief firms of the city, a considerable portion of the dental and medical professions, the legal profession, the city and county government, the post office, the courts, the leading social and political clubs, the hotels, theatres, Art Institute, principal libraries, the labor headquarters, and a great number of lesser factors of city life. These features in the city of New York, for example, are scattered from the Bowery to 59th Street, a distance of five or six miles, in Boston from the North Union Station to Copley Square, a distance of perhaps two miles, and in London from Aldgate Pump to Victoria Station, a distance of four or five miles.

Within this Chicago area are located eighty-five office buildings estimated to contain a fixed population averaging one thousand each. Within the "loop district," containing a quarter of a square mile, bounded by the elevated loop, and comprising the core of the business district, it is estimated by the office of the traction Board of Supervising Engineers that there is a permanent daily population of over two hundred thousand. The larger area included between the Lake, Chicago Avenue, Halsted Street, and 12th Street, comprising a little over two square miles, is similarly estimated to contain a permanent daily population of over five hundred thousand. Into this loop district, according to the same authority, come daily on the elevated and surface railways 332,243 persons, to say nothing of those who enter by steam lines or on foot or otherwise.

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No qualified person has ever attempted to summarize the conditions respecting light, air, and general health under which this population travels back and forth and carries on its daily work. Dr. W. A. Evans, Commissioner of Health for Chicago, however, speaking publicly about those conditions a few days ago, said: "We have allowed dreadful places to develop right here in this loop district, until certain unsanitary conditions are fixed almost beyond recall. We have jammed and crammed our people together, and have created conditions that are almost insurmountable. How much better it would have been for all the people if this district had been spread out. How much better it would have been for our city if, in some way, a plan had been devised by which the business use of property could be more widely diffused. . . . This artificial basis is making for bad health conditions — and of course bad health conditions come right back upon the shoulders of the producers." This characterization is not too severe.

Undoubtedly great practical economies result from this concentration, but it is doubtful if they exceed or even equal those which could be realized from a more expanded but rationally organized business center. Scores of thousands of people in that district work daily by artificial light, and many of them in rooms too crowded for easy and practicable ventilation. Such conditions of occupation are unnecessary and they can hardly be regarded as expedient.

As to the causes of this concentration, it is of course due primarily to the advantage to be realized from proximity to each other by the chief administrative processes of a great city and by their dependent activities. The chief practical reason for this congestion, however, is found in the lack of efficient and available means of local horizontal transit in the center of the town. A similar lack has produced somewhat similar conditions elsewhere, but the lack is conspicuous in Chicago, as are the results.

Chicago is distinguished from all other similarly shaped or located cities in that although its transportation lines,

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steam, elevated, and street car, converge upon the downtown district, no one of these lines has until recently passed on through that district to another portion of the city. Save for the two or three such lines lately established under the traction ordinances of 1907, Chicago has no cross-town transit routes through the business district and no shuttle lines running back and forth through that district to connect it with and extend it into the zone immediately surrounding it. Neither elevated nor street cars are of much use, even with a change of cars and a double fare, for travel in the center of the city, as illustrated by their comparatively empty state there. The business district is naturally limited thus in size to an area any portion of which is quickly accessible on foot from any of the various railway lines bringing people into and carrying them out of it.

In the absence thus of practicable lines for rapid horizontal travel, it was natural that travel should develop vertically, and that the "Chicago" or skyscraper construction should start, as it did, in the business district of Chicago. It was also natural that more intelligence and efficiency should be shown in developing rapid transit between the different floors of a great building, all owned by a single person or company, than between the separate buildings along a street, all owned by different and independent individuals or companies, with no common agent save a city government unaccustomed to municipal undertakings. Hence in an office building of that district you can ride three hundred feet vertically, at a rapid rate, free of charge, whereas it costs five cents to ride the same or any other distance in the street cars, and their routes do not suit your convenience.

Another force has also operated, and with startling energy, to produce this congestion, and to fasten it upon the city, namely, real estate and building speculation. When it was found that the high building, with its excellence in general appointments, promised better returns on the price of the lot than the low one, the prices of lots

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mounted. This rise has been in many cases startling, not to say fabulous.

Such a rise in value means that a given lot is predestined to that much more intensive occupation in order to pay income on that value. The purchaser, under the plea of an innocent holder and of vested interests, insists upon his right to put the land to that use, and does so. In other words, the district suffers from the operation of a vicious circle, in which an increased value arises from an increased density of occupation and an increased density of occupation from the increased value.

Although there have been many people in Chicago who have deprecated the gradual advent of the congested conditions indicated, yet the subject has never been carefully investigated or thoroughly discussed, and the investments already made in these conditions of course raise serious difficulties in the way of correction.

Obviously the only adequate and effective means of dealing with the subject must be public regulation, based upon a real understanding, both by officials and the general public, of the social effects of the conditions indicated. The public have in any event become convinced of the need for through transit routes, and its demand for such routes on the elevated roads is likely to prove successful in the near future. These route improvements will not be sufficient to correct these conditions, but they will at least have a certain tendency to spread the business district.

II. *Congestion in the Street.* — Congested street conditions in Chicago present three phases; namely, the crowding of passengers in cars, the crowding of cars, other vehicles, and foot passengers on the street, and the multiplication of transit levels, one above another, on, over, and beneath the street.

Probably the street and elevated cars of Chicago are crowded worse than anywhere else in the world except in New York. This exists, in the case of the street cars, solely because of the added profits thus to be secured. There is

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not a line in the city which is operated up to its maximum capacity, even in the rush hours, or if there be possibly one of that sort, a shift of some cars could be made to an adjacent line for a certain distance so as to increase the number of cars. The profits from the street cars, after paying all fixed charges, including five per cent on the agreed and more or less watered capital account, amount to about three million dollars per year, which is divided, fifty-five per cent to the city and forty-five per cent to the companies. Probably these profits, if expended for operating additional cars, would be more than sufficient to insure passengers seats at all times. The partnership of the city in the profits tends to quiet criticism of the crowding, especially from the official sources whence such criticism would naturally arise.

The crowding on the elevated lines is due in part to the fact that approximately the maximum of cars possible under the loop system of operation are now run. Through-routing would make possible an increase of from fifty to one hundred per cent in the number of cars operated. The companies object to such routing, first because their separate organization is not adjusted financially to such a plan, and second because it would increase the possible length of rides for the same fare. The plan seems likely, however, to be worked out to a greater or less extent. The steam roads of Chicago probably carry less than a tenth of the total number of passengers of the city, charge considerably higher fares than do the street and elevated lines, and are not greatly crowded.

The congestion of certain downtown streets with street cars and general vehicular traffic has increased materially in the last few years and is a serious hindrance to business.

Transit levels in the downtown streets now number three; namely, the street car lines, the elevated lines, and the freight tunnel lines. The last are tubes six feet wide by seven feet high, gridironing those streets twenty-five to thirty feet below the surface, connected with the basements of many business houses, as well as with different railroad

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freight stations, and designed to collect and distribute central freight.

An engineering report was made eight years ago for a system of double level passenger street-car subways under these streets, and another engineering study on the same subject, save that the elevated lines are also included in the study as possible tenants, is being made at the present time. If the double level plan were carried out for such subways, there would then be in, over, and under the downtown streets five transit levels,—one for freight and four for passengers, two of the latter underground. Of course such a multiplication of transit levels for the streets would be due essentially to the existing and prospective concentration of business and population in that district, and undoubtedly would, at least unless organized on the through-route plan, tend further to stimulate congestion.

I am of the opinion that such multiplication of transit lines is to be regarded as undue congestion of the streets, not only because the elevated lines are a nuisance in those streets, but also because I regard the current tendency to put travel under ground as objectionable from many standpoints and likely to prove temporary. The ultimate cause of these conditions is, of course, the lack of a city plan providing adequate spaces for circulation.

III. *Congestion in the Home.* — As to the existence and the causes of congestion in the living conditions of the masses of the people of Chicago it will be most profitable, I think, to discuss those conditions as far as possible in their broad relations, so as to see congestion, not as an isolated fact, but in its general connections.

Chicago's housing conditions for the masses of the people are chiefly characterized by disorder, accompanied with congestion, these conditions being due on the one hand to the activity of certain great special interests, and on the other to circumstances and tendencies more or less personal to the people themselves.

The feature of the homes of the common people of Chi-

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cago which most readily impresses the observer from the steam or the elevated railroads is their uncouth and often dilapidated appearance. These conditions are true of many areas. Not only does the wooden house of a past generation present a neglected appearance, but ramshackle stables, chaotic junk yards, littered vacant lots, broken sidewalks, poorly kept streets and alleys, straggling willow trees, and now and then the ugly blank wall of some isolated new structure, combine to give a general impression of disarrangement and sordidness to many localities where the working people live.

Disorder is also expressed in the uneven distribution of population in the city. The occupation of a particular lot may be badly arranged with reference to getting the best use of it; the same block may be crowded in one part and vacant in another, and a given section of the city may be thickly populated in one portion, sparsely in another, and not at all in another. So, too, density varies greatly, not only as between central and outer areas, but between areas equally distant from the center, and vacant areas are found in many places interspersed between those more or less thickly occupied.

As to the degree of congestion in the homes of the people, no comprehensive data exist. An investigation, however, made by the City Homes Association in 1900 gives important indications on the subject.

This investigation covered three residence districts aggregating 221.2 acres (including streets and alleys), or slightly over one-third of a square mile, and containing a population of 45,643, housed in 36,031 rooms. It was found that, of the total number of lots in these districts, 39 per cent were more than 65 per cent covered with buildings, 17 per cent more than 80 per cent covered and 5 per cent entirely covered, while 23.4 per cent of the houses were rear houses, and a little over 8 per cent of all rooms were cellar or basement rooms. Only 6.5 per cent of all lots, however, had houses over three stories high and 1.9 per cent houses over four stories high.

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The average number of rooms per apartment was 3.65. The average number of persons per apartment was 4.8, the average number of persons per room, 1.28, and the average density per acre, including streets and alleys, 206.2. Of all the apartments investigated forty-one per cent had a supercial area of only from eighty to three hundred square feet.

Much worse conditions than the average were of course found in a large number of cases. The density of certain blocks exceeded four hundred per acre.

The report estimated that the conditions shown were typical of the living conditions of three hundred thousand people, or one-sixth of the city's then population.

A cursory re-examination of these same districts in 1905 disclosed an improvement in neighborhood conditions through the establishment of small parks and playgrounds, better plumbing, garbage collection, and street paving; but the density of population had slightly increased, and conditions of light and air had somewhat deteriorated.

A count made last year from insurance maps showed 12,926 alley dwellings in the city, three-fourths of them of frame construction. The alley house, with its unwholesome and depressing surroundings, is a marked feature of the housing situation in Chicago and usually indicates both room and lot congestion.

Moreover, a well-informed real estate man recently expressed the opinion that there was quite as much need for attention to the character of buildings being erected for occupancy by fairly well-to-do people as to those erected for wage earners. He expressed the opinion that in a great proportion of flats of the former sort you could not read a newspaper at mid-day in the center of half the rooms.

A study now being carried on by the School of Civics and Philanthropy, by the aid of the Sage Foundation, concerning housing conditions in Chicago will deal with more extensive areas than those covered by the investigation of 1900.

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Chicago's housing conditions are due in a special way to lax public regulation. Prior to 1902 the percentage of the lot allowed to be covered by tenement houses was left to the discretion of the health office, and was practically ignored. Under the present building ordinance, residence buildings erected for more than one family must not exceed one and one-half times the width of the street on which they abut, nor cover more than seventy-five per cent of interior lots, eighty-five per cent of corner lots, or ninety per cent of lots bounded on three or more sides by streets and alleys. Within the "fire" zone, comprising fifty-one square miles, they must not be of frame construction, and outside of that zone they must be of fireproof construction if over five stories high, and of slow-burning construction if over three stories high. This last provision, adopted in 1902, has practically prevented the erection since then of tenement or apartment houses over three stories high. The above comprise the main provisions on the subject, and they are, of course, the same for all parts of the city, save as varied for fire protection.

The housing conditions of Chicago are due also, and in a certain fundamental way, to three great primary forces which have operated to direct population and development, namely:

The Real Estate Interests.

The Transportation Interests.

The Manufacturing Interests.

The real estate interests have been a largely represented, well-organized, and dominant factor in the story of Chicago. The City Directory enumerates six hundred and eighty-five firms and sixteen hundred individuals engaged in the real estate business, with two central organizations, one two years old comprising three hundred and twenty-five members, and the other twenty-seven years old comprising three hundred and fifty members.

These men are to be credited with having stimulated the development of different sections of the city, but the system

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under which they operate contradicts the possibility of city development in an orderly and far-sighted manner for the best interests of the city as a whole. Their competitive efforts to draw business development in this direction and in that inevitably produce an irregular and unsymmetrical distribution of territory employed for different uses.

That system has given us, too, in all parts of the city, from center to circumference, the vacant lot, not as a reserved factor in a carefully devised plan for gradual and continuous development, but as a cause of congestion through the resultant decrease in the area utilized. It is also a neighborhood disfigurement, through its unkempt and often insanitary conditions, and it is a social waste, consuming public improvements without return, and lengthening travel without profit. The assessment roll of Chicago would reach a larger total if practically all the city's area was occupied by its present population, under a plan affording fewer but larger lots than now, and assuring yards and gardens thus to many who are at present deprived of them. The vacant lot, held out of any sort of use year after year, not only makes for the disheveled neighborhood appearance indicated above, but aggravates crowding and means financial loss.

The second great factor which has operated to determine the distribution of population and business in Chicago has been the transportation facilities, by water and by land. The Chicago river, with its two branches, has been important in this direction, but the railroads have been much more so. Chicago is the great railroad town of the globe. It has twenty-three main lines entering its limits, and the manner in which they have effected entrance and the distribution of their lines through the city have been of primary moment in determining where business and manufacturing can locate and prosper, and to a considerable extent thus where the people can live.

They entered the city in competitive fashion, instead of in conformity with some well-planned, co-operative scheme.

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As a result their rights of way and terminals in some cases occupy space which should be occupied by streets, their lines frequently cross each other at grade, involving expense, delays, and danger, and they gird the surface of the city with a network so lacking in logic or comprehensiveness that they not only depress many neighborhoods, but tend toward a disordered and hence more or less congested distribution of population.

The manufacturing interests have likewise been a potent factor in determining the distribution of population in Chicago. By virtue of its strategic location at this great transportation cross-roads, in the heart of a vast productive area, Chicago has already become the second manufacturing city of the land. A factory is a loadstone to draw employees within its doors for work and into its neighborhood for homes.

Historically manufacturing plants in Chicago started largely in or near the business district, because of the central location, and along the two branches of the Chicago river, because of the transportation advantages afforded by the river and the adjacent railroads. The river wards are thus the most thickly inhabited parts of the city. Many important industries, however, started at more remote points, — for example, the Pullman car works, about fifteen miles from the center of town, and the Stock Yards, about five miles from that center.

Moreover, within the last few years a very marked outward movement of industrial plants has been taking place. For example, six or seven years ago the Western Electric Company moved a considerable part of its business from its previous location near the business district to an elaborately constructed new plant with excellent railroad connections about five miles distant. Four or five years ago the Sears, Roebuck Company, a mail-order house, moved from a location half a mile from the post office to a site surrounded by a considerable amount of vacant territory four miles from the post office. A real estate man recently named over to

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me in ten minutes a score of firms employing from a few hundred to as many as seven thousand people, and mostly doing manufacturing business, which have, within five to ten years, moved from locations within a mile or so of the post office to locations varying from two to five miles from that point, their main object in moving being to secure more space and better transportation facilities, both for their business operations and for their employees. These factories in their new locations and the wide decentralization of industry in general in Chicago as compared with other cities tend to decentralize population, although in particular localities thus influenced congestion may of course and does develop.

While the positive forces exercised by these great economic interests are affecting, along broad lines, the distribution of business and population, other forces more or less personal to the people concerned are also operating to determine their housing conditions.

1. The first of these is the rent. Broadly speaking, tenants seek as good homes as they can afford to enjoy, and an increase in their economic power is followed by an improvement in the places in which they choose to live. Indeed the appeal of the flat, without yard or garden, as against the individual house with both, is generally an appeal to the purse. The poor live in crowded conditions because, broadly speaking, those conditions are cheaper than more spacious conditions.

2. On the other hand, racial clannishness, especially among foreign-born people, often seems to induce crowded conditions of living, as is well illustrated in the Polish and Bohemian districts of Chicago. Members of those nationalities prefer cramped quarters in those districts to more roomy quarters at the same price elsewhere. Newcomers also find it a real practical convenience to be with people of their own tongue who can understand them.

3. The eagerness of families to get on financially and own a house, paying for it by renting portions of the house, not infrequently explains their living in crowded conditions.

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4. Tenants appear often to be prevented from hunting up improved homes by a sort of helplessness which seems to result from the pressure of long hours and perhaps a lack of imagination.

5. The lack of knowledge as to the danger and injury of living in congested conditions and the demands of urban life in order to sustain health and efficiency is the chief explanation of the apparent indifference of many people to their home surroundings.

6. Operating along with these various forces enumerated, and sometimes wearing the appearance of the decisive factor in determining living conditions, is the personal standard of the individual or family as to the demands of propriety in respect to the comfort and general appearance of their homes.

The paramount consideration, however, which impresses the observer in respect to this entire subject is the fact that while the tremendous economic forces indicated above have been operative and the tenant population has been making its upward struggle as best it could under difficulties, but has been more or less at the mercy of those forces, there has been sadly little and indeed almost nothing really tangible in the way of idealistic effort, either from voluntary or official sources, directed to housing betterment. Chicago is without the co-operative building societies of which one hears often in Europe, and, aside from the somewhat dubious experiment of Pullman, no important effort has been made by private philanthropy to influence the general field of working-class housing conditions. Public authority has not shown initiative in efforts to apply in Chicago the public control over housing which has been so beneficently developed in Europe. Public authority has not shown an adequate appreciation of the extent to which the people's lives are depressed to-day and the face of the city marred through bad housing, nor have any effective steps been taken to investigate and secure the facts in the case.

As the housing conditions of Chicago's working people

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present a noticeable aspect of disorder, so in the ultimate analysis are they due chiefly to a lack of an orderly plan of organization and distribution for the city as a whole. The practice of annexation which, under the influence of modern transit developments, has been so characteristic of American cities and is being copied in Europe, means that the space unit for the individual family may and should be enlarged. It means that people who want a lawn or a garden should have one. Our disorder in housing conditions in Chicago and our many vacant spaces are an incident of the thoughtless effort to exploit a vastly enlarged city area on a lot unit derived from a past age.

The more spacious conditions of urban occupation, travel, and housing, which the practical science of to-day renders entirely possible, can only be attained through a comprehensive treatment of the entire urban area, with a view to the orderly distribution of all its complex parts and functions, and with definite and adequate restrictions upon the permissible density of population in its different zones. City planning, with the housing regulations which naturally form a part of it, is the solvent of congestion.

CONGESTION IN PHILADELPHIA

GUSTAVUS A. WEBBER

Secretary Octavia Hill Association

WHILE the same causes which have already been outlined operate in Philadelphia, the resulting housing problem takes a different aspect.

Philadelphia, fortunately, had an effective tenement-house law enacted before the tenement-house evil had gained much headway. The act of 1894 not only regulates the building of tenement houses but makes their construction so costly as practically to prohibit them. There is probably no large city in this or any other European country where so great a proportion of the population lives in one-family dwelling houses and where so many people of moderate means, such as clerks, salesmen, artisans, and even factory employees, own their own houses.

This development of the small dwelling house has taken place without the aid of any philanthropic agencies. It was due in part to the favorable geographical position of the city, in part to the transportation facilities, but to a large extent to the building and loan associations which are probably more numerous in Philadelphia than in any other city. In recent years it has become the practice of builders to purchase large blocks of vacant land, cover them with one-family dwelling houses and sell them to individual purchasers on the installment plan. Unfortunately, in their desire to reap large profits, the builders usually erect these houses in solid blocks, frequently leaving only one hundred and forty-four square feet of open space for each dwelling (which the law requires) and a three-foot alley in the rear. Often these

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houses are constructed of the cheapest material and with the cheapest labor, and they are made as attractive as possible on the surface in order to deceive the unsuspecting purchasers.

While the modern one-family dwelling with its separate back yard accommodates the bulk of the people of moderate means, Philadelphia still has a serious housing problem. There is a large class of unskilled workers, mostly foreigners and negroes, who cannot pay more than eight or ten dollars per month for rent. They must live near their places of work, because they have neither the time nor the means to avail themselves of the transportation facilities. The only one-family houses accessible to them are the rear court and alley dwellings. These are usually three stories high, having one room on each floor, the houses being arranged in solid rows back to back, leaving only one side for light and air. This side often faces a narrow court or alley in which surface drainage and privy wells are common. Sometimes six or a dozen families whose dwellings face such a court have but one hydrant and one privy vault in common. Many of the blocks in the more central sections of the city are honey-combed with courts, alleys, and narrow streets lined with such habitations. As the construction or material alteration of court and alley houses has for many years been prohibited, these existing buildings are old and more or less dilapidated, many of them being structurally unsafe for habitation. The rents of these three-room, rear or court houses are usually from seven to nine dollars per month. There being no regulation to prevent overcrowding in these one-family and two-family houses, some of the families, particularly in the Italian sections, keep as many lodgers as the rooms will hold, and the room-crowding in such dwellings is as great as can be found anywhere in the United States.

In addition to the people who live in the regulated tenement houses where overcrowding is prohibited, and in the one-family rear and court houses above mentioned, there are many who crowd into the furnished-room houses. Here also

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there is no legal restriction of overcrowding, and the rents being high, the congestion is often as bad if not worse than in the rear houses. These furnished-room houses are usually three or four stories high, having originally been used as private one-family dwellings. They are in charge of conductors or care-takers who rent the rooms by the day, week, or month to single persons or to families. They exercise little or no supervision over the care or cleanliness of the rooms or the personal conduct of the tenants, and there is no public inspection service which specially concerns itself with this class of dwellings.

As this room-crowding in the furnished-room houses, in the rear or alley houses, and in the other one-family houses, is most common among foreigners whose earnings are necessarily small, it is not surprising that a recent report of the United States Immigration Commissioner places Philadelphia second in the rank of leading cities with regard to the number of occupants per room among its immigrant population.

CAUSES OF CONGESTION IN BOSTON

EDWARD T. HARTMAN

Secretary Massachusetts Civic League

MOST writers seem to be thinking of too many people to the room or apartment when they speak of overcrowding, and of too many people on a given area when they speak of congestion. The two are generally considered as being found together, whatever we call them, but we know that many small houses in the country are overcrowded, and that there are many thickly settled urban areas where there is essentially no overcrowding. Let us, for the present purpose, define both. Where people have in their sleeping-rooms less than four hundred cubic feet of air space per person they are overcrowded. Congestion we will define as so many rooms on a given area so placed that, even though occupied by the number of occupants usually found in American tenant areas, they cannot be properly lighted and ventilated. These are rooms, many of them with no direct light or air, on narrow streets, with narrow courts and small air shafts, with small or no back yards, and in buildings so high that proper light and ventilation are compoundedly impossible.

Now both of these definitions fit the conditions in parts of practically all American cities. In Boston a recent investigation shows that two wards, six and eight, with a total area of one hundred and three acres, have a population of forty-four thousand people, and much of the space is devoted to stores, factories, and warehouses. The investigation indicates that twenty thousand of these people live in overcrowded conditions according to our definition. Prac-

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tically the entire inhabited area of the two wards fits our definition of congestion.

Cause and effect are here hard to distinguish. They act and react on each other. All contribute, and it is often difficult to say which came first and which last.

Poverty and high land values, unfair competition which permits occupancy beyond what would be allowed by reasonable regulations, immigration, and poor transportation service are all causes of congestion, but unborn public opinion is a great cause of all these causes. It not only keeps things as they are by preventing the enactment and enforcement of effective laws and regulations, but it even prevents the enforcement of the little there now is along these lines. And public opinion is very lopsided. It prevents, or thinks it prevents, sweated industries, but sweated buildings and sweated lands are too seldom molested. The public pays too little attention to the officials; the officials pay too little attention to the owners; the owners pay too little attention to the occupants, and there is thus developed a chain of mismanagement, ill health, bad morals, inefficiency, and poverty from one end to the other of our congested areas. In this connection I want to mention a cause of congestion pointed out by Mr. John S. Nettlefold, that is, general ignorance concerning the vital importance of light and air. This ignorance is coupled with indifference among many who know better and with the superstitious belief that embalmed air is safer than night air. Were people thoroughly informed of the results of living under conditions where reasonable lighting and ventilation are impossible, many congested areas would be relieved.

Cheap labor of women and children, a by-product of congestion which manufacturers are quick to discover and use, increases overcrowding and congestion. The moving of manufacturing interests into congested districts increases land values and therefore congestion. In Boston recently a candy manufacturing concern wanted a new site. It could have had one suiting its general purposes at about two dol-

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lars a foot, but it chose to take another, no better, at ten dollars per foot, because it was close to the most thickly inhabited portion of a thickly populated ward. Its rent bill is small as compared with its wage bill. It could increase the one several times for the sake of cutting down the other a little.

Lack of proper town planning produces congestion. Some have boasted that upwards of fifty American cities already have, in their minds at any rate, schemes for city plans. In no single instance do these plans go further than the development of a few main traffic ways and boulevards, with perhaps a civic center. The real planning of towns takes us also into the areas where the people live. The sooner town planners realize this, and develop plans that fit proper home developments, the better it will be for us. Our present so-called plans ignore all this apparently with premeditated connivance. This, with lack of proper building regulations, causes much of our difficulty.

**THE PREVENTION AND RELIEF OF
CONGESTION OF POPULATION.**

AN INTRODUCTORY OUTLINE .

GROSVENOR ATTERBURY

Fellow of the American Institute of Architects

IN very briefly introducing this subject I wish to call your attention to certain points which should be borne in mind in its discussion:

First. That entirely aside from the fact that congestion of population is what we might call one of the functions of poverty, it would be well to realize that congestion of population is a symptom or expression of a natural tendency, whose growth has paralleled the progress of civilization. The upward progress of society has been, if not consequent upon, at least contemporaneous with, the increase of urban population. We, as a new nation, are probably feeling our growing pains with particular acuteness, but I doubt if we shall ever be able to eliminate those tendencies that cause them.

Second. That in so far as conditions are abnormal and unhealthy we must arrive at a correct diagnosis of the disease before prescribing the treatment. Of special importance in this connection, therefore, is a clear definition of "Concentration" as distinguished from "Congestion of Population" and the locating of the boundary line between the two conditions.

Third. That in spite of many appearances to the contrary there are certain very definite advantages in the concentration of population, and we should take care that in any alleviation we propose we do not plan to take away such benefits along with the evils of congestion. Consequently it may often be desirable, on the whole, to use the bearing capacity of land to its maximum safe limit, because

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any less intensive use would be in one sense extravagant, and so long as we can safely house in our cities a maximum number of people to the acre, on the basis of a proper standard of living, it may very probably be to their ultimate advantage to live in that condition of concentration, rather than to have the cost of living increased by being forced to live under conditions which are not really as economic as they might be in the matter of land apportionment.

So the logical sequence of our efforts with respect to existing conditions of congestion seems to be that we should first try, in every way possible, to transform congestion of population into harmless or even beneficial concentration before we attempt to interfere with a natural tendency of society and employ artificial means to decentralize or to distribute over more extended areas the so-called excess of population.

In considering this subject, therefore, with a view to briefly stating the elements of this very complex problem, I have asked myself the following questions:

A. What is the safe limit of centralization under various conditions and for various classes of population?

B. What are the various means of raising the bearing capacity or "safe load limit" of land to the maximum without producing congestion?

C. What are the various means of keeping population from exceeding that safe limit?

D. What are some of the conditions making for a rapid and successful operation of these various means?

The first question, "A," involving as it does essentially the definition of congestion, which must, I think, always remain more or less a relative matter, varying radically with racial, climatic, and other fundamental conditions, and, therefore, not subject to general definition, scarcely permits of an intelligent discussion at this juncture; at all events, of the categorical answer.¹

¹ I would like to emphasize in this connection the necessity of a very clear understanding of "Congestion" as differentiated from "Centraliz-

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Under "B," as representing the various means of raising the bearing capacity or "safe load limit" of land to its maximum without producing the conditions of so-called congestion, I have grouped the following:

1. Good city planning, especially with respect to:
 - Circulation of traffic.
 - Transit facilities.
 - Zones and height regulations.
 - Street and park systems.
2. Scientific housing, consisting of:
 - Good planning.
 - Economic construction.
 - Economic renting systems.
3. Proper legal control of housing conditions.

Under "C," as means of keeping the population from exceeding that safe limit of density, I place

ation" or "Concentration of Population." To say, for example, that high land values necessarily mean congestion I think shows a misconception, a misinterpretation of definitions. High land values do not necessarily mean Congestion, but "Centralization" or "Concentration of Population." Ordinarily the higher the land value and rental, the greater number of people to the acre, but until you get to a certain limit — and that limit may vary with our means of housing, and the character of the occupants — you do not necessarily find "Congestion," in the sense in which I think that word is ordinarily understood as applying to houses in distinction from individual rooms. For example: We regard a population of seven or eight hundred to the acre in the tenement districts of New York as serious congestion. Our land values in the tenement districts are perhaps based on those figures. The Hotel Seneca, where most of us are stopping here in Rochester, represents substantially that degree of concentration of population; but the Hotel Seneca does not represent what we mean by "Congestion." Why? Because the number of people to the square acre that are housed in the Hotel Seneca are properly housed. In New York the Hotel Belmont, the Manhattan, the St. Regis, the Plaza probably run as high as from fifteen to eighteen hundred, and at times possibly two thousand per acre, and yet we do not call that congestion. Why? Because while the density of population is very great, — probably greater than any other block in the world, — the occupants are properly housed.

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Decentralization:

First. By inducing distribution of population through:

- A. Education.
- B. Transportation facilities.
- C. Proper suburban housing developments.
- D. Proper distribution of factory centers.
- E. Direct distribution of immigrants.
- F. Suburban diversions and social resources.
- G. Co-operative building and loan associations.
- H. Intensive farming.
- I. Proper location of railroad terminals.
- J. Tax reforms.

Second. By coercion through:

- A. Municipal regulation applied to tenement conditions.
- B. Punitive taxation.
- C. The exercise of the police power, both as to design of buildings and manner of occupancy.

Under "D," as the forces and conditions making for and against the successful operation of these various means, appear the following:

1. Fluctuation of land values and taxes; the rapid unearned increment which leads to great and unnecessary waste in demolition and conversion losses.

2. The inconvertibility of buildings to meet these changing conditions and accommodate successive increases in population corresponding thereto.

3. Uneconomic street plans and lot units.

4. Poor construction, involving inordinate maintenance charges or rapid and unsanitary deterioration.

5. Dishonest politics fostering improper speculative operations, particularly exploitation of suburbs.

6. Topography.

7. Character of the population.

8. Wages and hours of work.

9. Commodity and food prices — particularly the latter.

10. Mortgage laws and rates of interest.

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11. Farm and garden labor supply.
12. The standards of living.
13. The incidence of taxation.
14. The Constitution — both State and Federal, especially mentioned because quite often ignored in philanthropic efforts to find relief from existing evil conditions.

While obviously incomplete and tentative, the statement of the most important elements of the problem of congestion which I have thus outlined in condensed and schematic form may, perhaps, serve as a suggestive guide to discussion, future study, and research.

THE SAFE LOAD OF POPULATION ON LAND

LAWRENCE VEILLER,

Secretary National Housing Association

I APPEAR here under some embarrassment. When Mr. Atterbury assigned this subject to me, I was impressed with the deep interest he had in it; but I did n't realize how deep it was until to-day, as I sat here and heard him deliver one-half my paper this morning in his fifteen-minute talk from the floor, and now the other half, in his treatment of the topic assigned to him, this afternoon.

Congestion is a most ancient evil. I imagine the earliest authentic record of any serious condition was in the Ark, and the problem there seems to have been solved by the methods we are advocating to-day — namely, distribution of population.

It is a far cry from Nero to Roosevelt, but the nearest approach to present-day conditions is to be found in the Rome of Nero's time. It was then that narrow streets lined each side with tall six-story tenements abounded as they do to-day in modern, twentieth century New York; and it was then also that laws limiting the height of buildings were first enacted, and the standards of those days are for all practical purposes the standards of New York to-day — 70 feet then, six stories non-fireproof now.

In later years undue population was the concern of England's rulers, even in Charles II's time, when royal edicts were issued against the concentration of the population in cities. The fear of the plague, the fear that the population would be "poisoned by breathing in one another's faces," that the

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police could not preserve order with such vast numbers of people, led to numerous efforts to prevent the growth of congested centers.

It is not perhaps generally known that as early as 1580 a proclamation was issued in London prohibiting the erection within three miles of the city gates of any new houses or tenements upon sites where no former houses had been known to have been erected. Some years later, the authorities went so far as to order that only one family should live in each house, that houses erected within seven years and still unlet should remain empty, and that all unfinished buildings on new foundations should be pulled down.

In the effort to stem the tide toward the cities, in the reign of Charles I, and even earlier, persons of means were ordered "within forty days to resort to their several counties and with their families continue their residence there, and not to put themselves to unnecessary charge in providing themselves to return in winter to the said cities [London and Westminster], as it was the King's firm resolution to withstand such great and growing evil." How strong the feeling of the authorities was, can be gauged by the fact that, in 1635, a Mr. Palmer, a large land-holder in Sussex, was fined one thousand pounds for disobeying the proclamation as to living in the country and remaining in London after the prescribed period.

Before there can be any profitable discussion of congestion and its causes, to say nothing of possible remedies for it, there must be a clear definition of terms.

We who are met here in this conference have a special obligation resting on us in this regard; as "experts," the laity naturally look to us for guidance and light, and for precise definition of terms above all things. Until this has been done, no program of effective work can be developed. Therefore I ask, "What is congestion? Does any one really know?" We use the term very easily, but some of us mean one thing by it, and others something quite different.

I think all of us have in mind that it is an undue crowd-

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ing of people. But at the very beginning we must distinguish between two very important kinds of overcrowding — room-overcrowding and land-overcrowding.

The causes that lead to the one are as radically different from the forces that have caused the other as are the remedies that must be applied to each.

With room-overcrowding, city planning has little to do. It is a serious evil and a growing one and an important part of the consideration of the housing problem. But, I take it, none of us imagines that the housing problem and city planning are one and the same thing, though they touch each other at several points.

Room-overcrowding, at least as we observe it in America, is an evil bound up largely with the social habits of certain foreign elements of our population, and is in no way due to the lack of wisdom with which our cities have been laid out.

It is a phenomenon observed chiefly among the Italians, and Russian and Polish Jews, and other Slavic races that in recent years have come to our shores in such large numbers. It is almost never observed in America among the Germans or French, and only occasionally with the Irish and Negroes. It is rarely found with native Americans. It is due to greed quite as much as to need.

It is seen not only in the crowded Ghettos of cities like New York, but in isolated shanties on our prairies — in cities of a million, and in the farming country of both East and West. With this very brief statement of its nature, we may dismiss it from further consideration.

Land-overcrowding is a very different matter, however. It is very properly to be considered in connection with the discussion of city-planning problems, as it is due so largely to the improper laying out of streets and the adoption of the wrong lot unit. If we will persist in cutting up private property into lots 100 feet and 150 feet in depth, and laying out our blocks from 200 to 300 feet between streets, we must not be surprised if land-overcrowding ultimately develops. As

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neighborhoods change, and cease to be devoted to high-class residence purposes with large front yards and back yards, other uses must be found for the property. With the deep lot, the necessity for building deep soon becomes apparent, the owner necessarily must use a larger part of his land, in order to get a satisfactory return for his money. This will surely happen unless the community is alert and observes these tendencies in time and curbs them through restrictive legislation.

So too with the great evil of buildings of undue height. The skyscraper did not come into being overnight, but was a natural development through a considerable period of time. High land values have made high buildings; and in their turn high buildings have made high land values.

City planning is vitally concerned with these two important phases of the housing problem. Unless we make deep lots and high buildings impossible, we are destined to have land-overcrowding. These are the forces which inevitably bring undue concentration of population upon land.

But our definition of congestion still waits. We have stated it to be an undue concentration of population upon land. This implies that there may be a concentration of population that is not undue. There is, in other words, as Mr. Atterbury has pointed out, a great difference between congestion of population and concentration of population. It is because we have failed to keep this clearly in mind that there has been so much confusion in the public mind, so much loose thinking on this subject.

This has been greatly augmented by the tendency of the public to think in Procrustean terms. It has been so convenient a thing to discuss this problem with reference to the number of persons to the acre that many of us have begun to think that this really was an important consideration.

We have raised our hands to heaven and in horrified accents exclaimed at the wickedness of allowing people to live 1000 to the acre. Calm, deliberate examination of the

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question shows us how utterly impossible is its determination by any such arbitrary standards.

In the Hotel St. Regis in New York, and its neighbor across the way, the Hotel Gotham, two of our best and most fashionable hotels, there are over 1200 people to the acre. Not even a wayfaring man of proverbial intelligence would suggest that such conditions indicate congestion, or present problems which call for serious consideration. It is obvious that the mere number of persons to the acre in itself is not conclusive. The height of the building, its relation to adjoining property and to the abutting streets, the disposition of the spaces left vacant for light and air, and especially the actual distribution of its inhabitants and the way in which they live are the controlling factors.

In that great New York Ghetto — the lower East Side — there are many blocks housing 3000 people in each, that is, a population of 1200 to the acre. The conditions there, I believe, may with perfect safety be called "congested," but it is not because there are 1200 people to the acre that this is so. It is conceivable and easily demonstrable that as many people can be housed on the same area as are now housed there, but under conditions that are not only not objectionable, but are in many ways almost ideal methods of concentrated city housing.

Mr. Newton Stokes,¹ an architect who has done so much for the cause of housing reform, ten years ago showed how this could be done in connection with a municipal park. As he pointed out then, the much abused 25 by 100 city lot lends itself to almost ideal treatment when the dimensions are reversed, and the lot is but 25 feet deep and is 100 feet in width. It is not so much the narrow width of the 25 foot lot that makes the trouble as it is the extreme depth.

I can conceive of several ways in which an ordinary city block may be treated and a large urban population safely

¹ See "Tenement House Problem," DeForest & Veiller, Vol. II, page 59.

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housed, with a concentration of population as great even as 1500 people to the acre, and no evil conditions result.

If, for instance, the area 200 feet by 400 feet ($2\frac{1}{2}$ acres), now devoted to tenement-house purposes, in the ordinary New York City block were so disposed as to produce three parallel rows of six-story tenements, each 25 feet in depth, and the full size of the block in length (400 feet), with two streets each 60 feet wide between them, practically ideal conditions of city housing would be had. The buildings thus produced would each be but two rooms deep, thus ensuring "thorough" ventilation; every room would be an "outside room"; courts, shafts, yards and all similar devices to secure light and air would no longer be necessary, and the housing problem would cease to be an architectural one. With such a disposition of the land, over 1500 persons to the acre could be thus housed (1555 persons, if we do not include the land thus devoted to street purposes), and this same city block would then house 2592 persons under sanitary conditions.

Were we to consider the placing of high square towers on each of the four corners of the block, each erected to a height say of ten stories and equipped with elevators, it is conceivable that the capacity of the buildings might be increased fifty per cent without detriment to living conditions.

Concentration of population is, then, not an evil in itself, but a necessary accompaniment of urban life.

It is only "undue" concentration or congestion that need concern us.

How shall we define "undue concentration"? Frankly, I do not know. I doubt if any one knows. Where shall we draw the line? When does concentration cease to be "due" and become "undue"? We have seen that we cannot determine this by the number of persons to the acre. The maximum safe load of population upon land cannot thus be established. Are there any other ways? I know of none beyond the consideration of all those conditions of living which go to make up the welfare of the community.

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We have listened this morning to some amazing and many amusing theories about "congestion" and its causes. One or two of these I want to dwell on for a few moments.

First, that "congestion is the result of exploitation and protected privilege." If this be so, we shall find congestion, then, wherever these evils exist. I know of no city in America where "exploitation and protected privilege" do not flourish, and yet in most of those cities there is no congestion of population whatsoever.

Second, that "a cause of congestion is low wages." If this be so, then we shall find congestion prevalent in those cities where wages are lowest, and least of it where wages are highest. The facts do not bear out this view. Congestion is at its worst in New York City, where wages are highest, and does n't exist in hundreds of cities where wages are low.

A third cause was stated to be "speculation in land and unjust municipal taxation." It would be hard to find a city in America where "speculation in land and unjust municipal taxation" do not prevail, yet outside of New York and Boston there are but few cities where even the beginnings of congestion are evident.

There has been equally loose talk of the evil consequences of congestion. About this we know little. In New York's most congested district, the lower East Side, the death-rate for years has been lower than in parts of the city much less densely occupied. There are too many other elements involved, however, to permit us to safely draw inferences either way.

Be these things as they may, it behooves every city planner to do what he can to prevent congestion and to build our cities so that undue concentration may be avoided.

The deep lot and the tall building—these are the things that make for concentration of population, these are the tendencies which our city plans must look out for and must check. We may build garden cities and model factory

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towns, but let us remember that no matter what sort of garden cities we have or how we beautify them, we shall always have in our large cities an urban population which must be housed.

Our task is to see that it is wisely and safely housed.

THE RELATION OF THE "SOCIAL" TO THE "ARCHITECTURAL" IN HOUSING AND TOWN PLANNING

GEORGE B. FORD

Architect, New York City

THERE are three ways of approaching the housing problem. The social way shows wherein living quarters such as now exist may be made as agreeable and beneficial as possible, or it shows what are the possibilities and desirabilities of better dwelling accommodations with the intention of causing people to demand them. The legal way is best illustrated so far as American conditions are concerned by Mr. Veiller's "Housing Reform" or his "Model Tenement Housing Law." The great trouble with any legal reform is that in order to be definite enough so as to allow no loopholes it necessarily means that every builder will try to get the maximum possible within the laws, and this reduces all construction to a stereotyped plan. When imposed on a new district it makes every owner build up to the maximum of the worst districts of the city. At best, therefore, it gives the city dweller only such accommodations as the real estate interests will allow.

The other way of attacking housing reform is through model dwellings. Most of the so-called model tenements erected in America contain no new ideas. There are some exceptions to this statement, such as the Phipps House No. 1, 31st Street, New York, the Shively tuberculosis tenements, Mr. Morrill's adaptation of Edison's concrete houses, and the Roadtown invented by Mr. Chamblëss, but none of these get down to a comprehensive view of the

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whole question. None consider in their relative importance all those features which may make for a better family life.

To do this we must analyze the life of the tenant. We should consider in detail what the father does in all the hours of the day, what the mother does, and what the children do. Each one's needs must be studied and reflected in the model tenement. A few instances will suffice to illustrate. It must be borne in mind that the mother has to do her housework and keep her eye on the children at the same time. Much stress, therefore, should be laid on the arrangement of the room where cooking and washing are done, so that there will be a place for the children to play in the same room, or else in an adjoining room within view of the housekeeper. In order to get the maximum privacy for each family the windows of one suite should be arranged so that they would not open to the direct gaze of a neighbor, and so that the sounds and smells of the street and those of one portion of the house will not be communicated to the other. Much could be done in the securing of this object by the arrangement of various flowers and vines in window boxes on the street side of the house. This arrangement would serve the further purpose of freshening the air and brightening not only the exterior aspect of the house but the interior.

The most important thing to be secured in the model tenement is an adequate amount of fresh air and sunlight, and to secure this it is necessary to go back of housing to town planning, since it is vital that the given district should be laid out in the right way to start with, and in the development and spread of all cities everything should be made subservient to the laying out of the town plan which would secure these results at the minimum of expense. Such a policy has never been followed in America, at least scientifically.

This interrelation of housing and town planning should be dwelt upon on all occasions, as it is not at all understood in America. In studying any given housing problem the

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first work should be taken by the sociologist. He should analyze the conditions of a given district in detail and its probable direction of growth. He should then confer with the architect and the landscape architect to so coöperate that they may design an arrangement of buildings which will be to the maximum advantage of the future tenants.

INEXPENSIVE HOMES OF REINFORCED CONCRETE

MILTON DANA MORRILL

Architect, Washington, D. C.

THE inexpensive and sanitary home is an essential element in the solution of the problem of congestion, and the detached house with a small plot of ground is the ideal goal. After considerable study I have come to believe that concrete is the material presenting the greatest possibilities from the standpoint of sanitation, permanence, and economy, and that the box-shaped house is the least expensive form of habitation, since it requires the least wall area to enclose a given space. Economy compelled me to put out of my mind all architectural development and go back to first principles and to primitive habitations. Everything in daily use has been standardized, and the same principle can be applied to houses. Individuality is perhaps sacrificed by standardizing homes, but is not this a possible solution to our problem, and cannot standard houses be designed which will be vastly superior to our present cheap habitations?

In the construction of concrete houses I have found that for thin walls cast in wooden forms the cost of lumber and carpentry was three times the cost of the concrete. To eliminate all this carpentry and lumber waste I have designed a sectional steel mould equipment which is made of light flange plates of pressed steel clamped together to form a continuous trough around the walls and partitions. This is filled with wet concrete which is stirred and allowed to set over night. The plates are two tiers in height, the

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lower tiers being loosened, cleaned, and swung on top by hinged rods each day. The plates are piled so that a perfectly smooth wall is left, requiring no plastering. A brush coat of white cement may be put on to give a uniform finish and to afford protection against dampness. In cold climates inexpensive insulating boards are imbedded in the middle of the walls to prevent condensation and transmission of heat. The floor centering is made up also with these plates, posts being wedged up under for support.

Standard type and steel moulds are made also for fireplaces, stairways, sinks, ice boxes, etc., and to make an attractive mantel it is only necessary to lock together the standard moulds, and the cost is a quarter the cost of the less substantial wood fixtures.

One of my designs is so arranged that it can be built in sections, almost as a bookcase is put up, being complete in four, five, six, and seven room dwellings, and any number of rooms up to twelve can be made or added with no alteration. Passages and hallways have been eliminated, however, leaving all space available for occupancy. All rooms have light on the two sides. One chimney must serve, and convenience and economy in housework are of first importance.

In the experimental house which I have constructed at Brentwood, Maryland, there is very little wood except the window sash and doors. The walls are eight inches in thickness, and floors are four and one-half inch slabs reinforced in both directions. One car load of Portland cement sufficed for the construction. Waste heat from the kitchen range warms the house through circulation of hot water, being so built that in summer an inside fire box cuts off the house-heating system. All fixtures, such as kitchen sinks, wash tubs, lavatory, and bath tubs are cast in concrete, and give a very smooth cement finish. For the water supply a concrete tank is built in the top of the bath room, which is filled from a small force pump at the kitchen sink. The building has no exterior ornamentation,

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as the flowers and vines in the window boxes give the best of decoration and color. The flower boxes (of course they are of concrete) now contain small cedar trees which we gathered near the site. The vines are the wild honeysuckle which grow in such fragrant tangles all about.

The equipment for house building costs about \$400, and the saving on a single building is more than this amount. All parts are of pressed steel and are practically indestructible. There are only eight different parts required for house building, and all joints are firmly held by wedges so that erection is quickly accomplished, and no skilled labor need be employed. It is difficult to base an estimate of cost of construction of this first house, since the moulds and the superintendent's time have been charged against it, but it can safely be estimated that these houses in groups can be built at between \$200 and \$300 per room. The contractor's estimate for building three-room apartment dwellings for the Octavia Hill Association of Philadelphia was \$300 per room, or \$900 per apartment for concrete and \$1,100 in brick. These can rent from \$8 to \$10 per month. In these houses the kitchen fixtures, sinks, ice box, and closets are to be of cement cast in steel moulds, occupying one end of the living room so that by light washable curtains these can be screened when not in use. Bath rooms are interlocking in plan so that no space is lost.

The following are a few of the special features which I have incorporated in my design: The coal is hoisted by a simple chain block attached to a swinging davit, and is dumped through a hole in the roof to a large pocket from which it feeds by gravity into the firebox of the stove, the ashes falling into a pit and being removed from an outside door. This stove combines in one compact fixture cooking range, house and hot water heater, and gas stove. The garbage is placed in a cast-iron chamber in smoke flue, and after drying is dumped into the fire box by a damper. The ice box, which is filled from the outside, is arranged for use as a fresh-air closet, doing away with ice except

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in hot weather. An attractive feature of the house is the roof garden and sun room, forming out-of-door bedrooms, divided by use of movable screens.

Plans have been prepared for a group of five and seven-room houses to be constructed by the Mount Hope Finishing Company of Fall River, Massachusetts. In these houses every room has windows on at least two sides, and all are arranged in such a way that they can be built as double houses or in block where land value prohibits the detached house. While single homes can be constructed along the lines of these designs, the great economy by wholesale building makes it desirable to construct in groups, so that they can be almost entirely machine made. Just as in our clothing tailor-made suits can only be afforded by those whose salaries warrant it, so in our homes the especially designed and built house is only within the reach of the comparative few.

MUNICIPAL TAXATION AND ITS EFFECT ON TOWN PLANNING, CITY BUILDING, AND THE HOUSING QUESTION

HON. FREDERIC C. HOWE

New York City

WHAT is the obstacle that obstructs the planning and building of cities? What is it that compels the herding of people into crowded tenements when the entire continent invites us to use and occupancy? What is it that compels the sacrifice of art, beauty, and comfort in the location and construction of public buildings, school houses, and structures, and precludes the laying out of parks, boulevards, and playgrounds?

The business men and philanthropists who have builded new cities like Dalny and Kioatchau in the Far East, the new town of Gary in Indiana, and garden cities like Port Sunlight in England, offer the answer. It is the prohibitive price of city land. It is this that cramps, cabins, and confines our cities; it is this that explains the tenement and slum; it is this that prevents the orderly and symmetrical development of a city so that it may be a thing of beauty, of comfort, and of joy.

City planning and the housing question are primarily land questions. The Germans have recognized this, and they have built the most wonderful cities in modern times. So have the English in their new town-planning legislation. So also have the French.

Has the method of levying taxes anything to do with this condition? Can that method be so adjusted as to promote the city beautiful and correct the tenement evil?

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For three years I was engaged on the Pennsylvania Tax Conference. Later I wrote a book on the subject of taxation. For nearly twenty years I have been interested in the subject and have devoted a considerable portion of my time to its study.

For the past six months, too, I have served as one of the members of the Tax Board of the city of Cleveland. And without any reservation, I have come to the conclusion that the orderly and symmetrical building of cities and the housing of urban population can be corrected through the taxation of land values more easily and more fundamentally than in any other way. By the taxation of land values I mean the abandonment of all taxes now levied against houses, buildings, improvements of all kinds, machinery, goods, stock in trade, and personal property of every kind and description, and the dropping of all local taxes on to the value of the land. I do not mean that we shall tax land, but rather the rental value of land. In other words, that all of the revenues of the city shall be taken from the ground or land rent, as is commonly done by private individuals under the ground-rent system in the business centers of our large cities.

There is no difficulty about this. As a matter of fact, it is the easiest thing in the world to do. New York City has separately valued land and improvements since 1903. Boston has done it for a much longer period. We have succeeded in valuing the land of Cleveland more easily, justly, and economically than I thought possible. And we have done it with the minimum of complaint and protest.

Is this suggestion just? Is it fair to discriminate in this way against one class of property? Irrespective of the social results to be obtained, it is necessary that a proposal be just before it can command a hearing. Land-values taxation is in reality taking that which belongs to society. It involves the assumption by the community of that which the community has created. For land values are social values. They are not due to the thrift, enter-

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prise, or business ability of the owner, or of any service that he renders to society. They are an unearned increment, and are largely due to the growth of population.

Are they adequate for the needs of the city? Can we abandon all other forms of revenue? As a matter of fact, ground rents or annual land values are colossal. They far exceed all the needs of the most extravagant community. We can take New York City for an example. During the four years from 1904 to 1908 the land values increased year by year from \$3,057,161,290 to \$3,843,165,597. In four years' time the speculative increase in the land amounted to \$786,004,307, or nearly \$200,000,000 a year. The increase is fairly normal year by year, and fairly reflects the birth rate and the growth of population. During these years the total expenditures of the city amounted to about \$160,000,000 a year, or \$40,000,000 less than the speculative increase of the land alone. Did the city appropriate only the future growth and leave untouched the values which to-day exist, it could abandon all other forms of taxes and enjoy greater affluence than it does to-day.

New York City is not exceptional. Similar investigations have been made in Boston, in which city the speculative growth is more than the amount of the total revenues of the city. In Washington, San Francisco, and other cities a similar growth in values has been shown.

The taxation of land values is not only just and adequate for all municipal purposes, it has been adopted in a modified way in the German cities, and is an acute political question in Great Britain, Belgium, Denmark, Switzerland, and Austria. A half-dozen cities in northwestern Canada have adopted this method, and abandoned all taxes on improvements, as have over sixty cities in the various colonies of Australasia.

Let us now follow the effects of this shifting of all taxes on to the value of the land. How would it affect the problems we are considering to-day?

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In ancient France a tax was levied on windows. It caused the windows of the peasants to be boarded up. The people preferred to live in darkness rather than pay the tax. During the eighteenth century a chimney tax was imposed in Ireland. The Irish tenant met the tax by tearing down his chimneys. He lived in the dirt and smoke of a chimneyless cabin. The tax destroyed the thing taxed.

We all recognize the evil effects of these mediæval taxes, and political economists have laughed at the shortsightedness of the French and Irish statesmen. It is so obvious to us that taxes on windows and chimneys discourage a thing that society should promote.

Have we in America abandoned the window and chimney tax? Are we really any wiser than the oppressive tax gatherers of the old régime? The prejudice which exists in favor of any existing system is so deep rooted that I fancy I cannot more than challenge the system which prevails to-day in America. Yet the French and the Irish were probably just as honest in admiration of their system as we are in accepting the general property tax which discourages, fines, and punishes him who builds a house, improves his estate, erects a model tenement, or conforms to the health and plumbing regulations of our cities.

For we tax the man who builds a beautiful building more heavily than him who builds an ugly one. We punish with a fine him who erects a model tenement, and encourage the lazy owner who is content with a slum. We penalize the man who paints his house, adorns his dwelling, and employs an architect rather than a contractor. On the other hand, our laws applaud the man who leaves his premises as disreputable as possible. If you do not believe that this is true, you need only sit on a Tax Board in the city or in the country, and listen to just such arguments as I have made. Further than this, we encourage men to hold land idle. We discourage its improvement. This is clearly the result of taxing houses, improvements, and betterments. For under existing institutions there is more

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money to be made in speculation than there is in house ownership.

If we reverse this system, and abolish all taxes on improvements, we would give a stimulus to those things we want. We would encourage beauty and art. We would stimulate house building and tenement betterment. We would stamp with public approval the man who contributed to the well-being of society rather than penalize him for his industry.

But this is the least of the gains which would come from the taxation of land values. The great gain would come in another way. I have seen a sleepy village converted into an active manufacturing town by the taxation of vacant land on its value as building lots rather than as farm land. The owners got busy. They divided up their estates. They sold them out in allotments. The city doubled in population. People acquired homes who had previously been tenants. The whole aspect of the city was changed in a few years' time. For the land speculator was unable to keep his land in idleness. He had to use it or sell it to some one who would. The burden of taxation was so great that self-interest impelled him to get rid of his idle holdings. This is the first effect that would follow from an increased tax on land. It would penalize the dog in the manger. It would check speculation. It would free land from its idle holding and bring it into use. I have always felt that the explanation of the metamorphosis which has taken place in New York City in the last ten years was due to the change in the taxing methods adopted in 1903. For the first time land was taxed at its real value. And the burden was so great that men had to use their land in its most productive way. It has been said that the cities of Ohio always witnessed a great building revival subsequent to the decennial appraisal of real estate, and it is reasonable to believe that this is true.

But I have not touched upon the great benefits to town planning, city building, and the housing question. A tax

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on land values cheapens land. It does this in two ways: First, it forces idle land into the market. The competition of sellers brings down prices. This is the natural and inevitable result of increasing the supply of any commodity. Second, and this is the permanent effect, a tax on land is a tax on ground rent. It is paid by the ground landlord. It is taken from his ground rent. And he has to pay it. He cannot shift it on to any one else. It is in reality an income tax assessed against rent. I need hardly verify this from authorities. Yet an appreciation of this fact is so fundamental to the social effects which I have said would follow, that I cannot forbear quoting some reputable authorities on the subject. Ricardo, the great British economist, says: "A tax on rent would affect rent only; it would fall wholly on landlords, and could not be shifted to any class of consumers. The landlord could not raise rent." John Stuart Mill testifies to the same thing. He says: "A tax on rents falls wholly on the landlord. There are no means by which he can shift the burden upon any one else. A tax on rent, therefore, has no effect other than its obvious one. It merely takes so much from the landlord and transfers it to the State."

To make the quotation concrete: If a man is getting \$50 a year ground rent from a piece of land, the land is worth the capitalized value of the income, or \$1,000. Now if the state increases his tax and appropriates \$20 of his rent, the landlord's income will fall to \$30, which, capitalized as before, makes the land worth \$600. If the tax is still further increased to four per cent, the capital value of the land is reduced to \$200, and if the tax is increased to five per cent, the capital value of the land disappears altogether. In other words, ground rent is that income which is left after taxes are deducted. If we increase taxes, rent diminishes. If we diminish taxes, rent increases. The landlord and the state are really partners in the ownership of land.

It is this cheapening of land values that is most impor-

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tant in city planning and the housing question, just as it is the prohibitive price of land which makes all these reforms that we most want impossible. This, with the stimulus to the use of land, would bring about a revolution in city building in a few years' time that would surpass all of the regulatory measures and all of the health and sanitary inspection that can be devised. There is no reason why the building of homes should not inspire the same sort of ingenuity, skill, and scientific enthusiasm that has been awakened by the building of automobiles. And such skill would be awakened were landowners forced to compete with one another for tenants as they would be were their land subject to such a tax as has been suggested. Then houses would compete for tenants instead of tenants competing for houses. Then owners would introduce beauty, cleanliness, and the latest sanitary devices from necessity rather than from compulsion. Then builders would be moved by self-interest to devise attractive homes instead of warehouses for human beings. The explanation for the backwardness of home building and the relatively insignificant advance which has taken place in the last generation is due to the fact that population is always outrunning the supply of houses. Anything can be rented, no matter how cheap, tawdry, and unhomelike it may be. This, too, I think is verified by the experience of New York. No city in the world approaches the American metropolis in the convenience and attractiveness of its office buildings, in the splendor of its hotels, and in the wonderful ingenuity displayed in the construction of high-class apartment houses. Buildings begin to be antiquated before they are old. A few years' time sees a reduction in their rent. In twenty or thirty years buildings are ready for the scrap heap. This is not due to the high price of land. It is due to the heavy tax on land. And if we carried this principle further, if we doubled the existing land tax, landlords would be compelled to enter a race for tenants just as automobile manufacturers now race for purchasers. House building and the

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housing question would be subject to the same laws of competition that govern other business.

This cheapening of land would make city building possible. It would enable docks to be acquired and developed along the water front, it would permit the acquisition of land for parks and playgrounds. Public buildings could be grouped so as to secure the maximum of architectural effect, while the suburbs of our cities could be laid out in a spacious and beautiful manner. There is no reason why the city of the future should not be a garden city, just as much a garden city as the play cities which philanthropic men have constructed in England. Their philanthropy has been made possible by cheap land which they have acquired at farming rates and developed into an urban community unchecked by excessive land values.

All this was theory up to a few years ago. In 1904 Germany, with that far-seeing wisdom that characterizes all things municipal in that country, began to tax land values. It revolutionized its local revenue systems. One after another the cities have begun to tax the unearned increment, to levy a toll on the profits of the land speculator. Now the nation itself is planning to add its tax to that already collected by the local community. The city of Frankfort, a community of three hundred and thirty-five thousand, collects one-fifth of its revenues from the profits of the land speculator. The Frankfort system, with some modifications, has spread to all the large cities in Germany. Unimproved land is taxed more heavily than improved land. The speculator is punished for his sloth, the builder is encouraged for his enterprise. From one to thirty-three per cent of the speculator's profits are taken by these taxes, the total tax amounting to about nine and one-half per cent for the entire country of the land speculator's gains. I spent some months in Germany during the summer of 1909. I heard nothing but approval for these new taxes. I was told that it sounded the death knell to city cabbage patches. It had led to unusual activity in

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building operations, besides supplying the cities with a rapidly increasing source of revenue. The testimony from New Zealand, where similar taxes have been assessed for many years, is much more conclusive. Between sixty and seventy cities have abandoned all taxes on houses and tax only land values. Several cities in northwestern Canada have adopted the same system. The testimony of officials of Australasia is all to the same effect.

CUTTING THE ROOTS OF CONGESTION

BOLTON HALL

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WE lay out our model towns, our "Garden Cities," as Salt Lake City was laid out, providing for growth, destining the centers for business, the inner circle for homes and parks, the circumference for market gardens, the outer circles for farms and factories, and beyond that for pastures and forests. But what use is it to sow the good seed if at the same time we sow the weeds that will choke it? What use to plan for expansion if at the same time we force congestion?

Because of speculation in land we find the three-story tax-payer and the thirty-story "sky scraper" side by side, desirable corners and valuable sites held out of use, so that our towns are not like a heap of wheat, but rather like a weedy field. There is just one way to cure that, the way that is forcing itself into the budgets of so many countries and cities — New Zealand, Kiauchou, Vancouver, Alberta — and making a beginning even in conservative England, — the taxation of land values. That alone, carried to the point where it will penalize and strangle speculation in land, is the coming remedy, clearly and more clearly the logic of events, and the example of our neighbors is forcing us to recognize it.

We cannot, and we would not if we could, force the adoption of that remedy — "He that believeth shall not make haste." But in the meanwhile we can do much by simple commercial means to alleviate the evil. Improved transit is an excellent temporary measure; but in the end it in-

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creases the values of the central land and rewards still more, at the expense of the rest, those who are shrewd enough and rich enough to foresee and profit by the growing demand for room. Distrust of speculative land schemes and the scarcity of loans keep our people in our overcrowded towns. Even now hordes of our people would go "back to the land" could they borrow on that land enough to enable them to build homes on it, to improve it, and to make it valuable.

The remedy for congestion is to make it easy for the city dweller to establish himself in the country. The process must be automatic, not forced, and it must extend itself and not depend on promoters; it must be commercially profitable so that it will be general. Our own beneficent provision of homes can reach at best but a fraction of the people. If we are to accomplish a great change we must make the change reward the changers as well as the changed.

The main obstacle to going to the near-by country is that few persons can pay a speculative price for a lot and have enough left to build a house and lay out a garden. And in the rural districts, they cannot get building loans; generally not even mortgage loans on the completed house. It seems strange that with the abundance of money in our great cities and in adjoining towns loans cannot be had, especially as loans are freely made on far distant western farm lands; but lawyers will not take half a day to look up loans in a rural district with which they are unfamiliar, for the sake of the extra one per cent that their clients can get. The Building Loan Societies near New York are nearly all in the hands of "insiders" who take up all the money that the Society affords. The big insurance companies once loaned recklessly on country property at speculative prices, and thereafter discontinued rural loans, and the local trust companies usually have a large part of their money drawn off to New York by those with whom they are connected.

There are thousands who have enough to get a lot or who

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would easily borrow it from relatives or friends if they could give assurance that it was not to be paid out in profits to some speculator. The business of making rural building loans can be done only by companies that make a business of it and apply business methods to it. A company is in course of formation in New York and such companies should be formed in every city; they will prove profitable and go further than any other immediate step to get the people back to the land.

VILLAGES FOR WORKINGMEN AND WORKINGMEN'S HOMES

WARREN H. MANNING

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THE place for workingmen's homes in towns is within walking or bicycle distance, or within the five cent fare limit of their place of employment.

Manufacturers of heavy or bulky products must be on main steam roads or the belt roads that connect such lines. In such factories, if the margin of profit is so small as to compel low wages, then a hideous, dirt and smoke grimed slum district develops on adjacent limited areas. Manufacturers of light and small products that return a margin of profit conducive to giving good wages, may go far enough from main steam roads and belt lines to avoid congested areas, and thereby enable employees to have detached houses in open lots. When such products give so small a margin of profit as to require the cheapest labor, then the factories must crowd close to city slums, these often having a population of nearly a thousand per acre. If this population is restricted by requiring for each person, say, four hundred cubic yards of air space in home and factory, then the factories must seek another slum unless some way can be found to give better housing conditions to this cheap labor without an increase in cost to the laborer.

This last is the problem that I am presenting to you with such light as I can offer. I have long realized that if we can make it possible for the lowest grade of laborer to live better on his income, then all labor will be benefited.

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It is a matter of interest in this connection to know something of the cost of constructing workmen's villages and the houses, because this knowledge will help us to determine the practicability of providing similar villages for the lowest class of employees that now occupy the city slums.

In Ithaca there was a long, narrow, very steep, and irregular strip of ground leading from the village up the Cascadilla Creek bluffs to near the elevation of the Cornell University buildings. Here roads, sidewalks, sewer, water, and gas pipes were put in place. Building lots were graded and planted, and a protecting barrier provided along a public walk that was made at the edge of the bluff to give views of the ravine and its falls. Such improvements increased the initial cost per lot by about \$200 each. Of this amount \$25 was for sewer, water, and gas mains; \$20 for house connections from mains to house foundations; \$75 for road construction; \$20 for gravel paths; \$60 for planting and grading. Here the percentage of road construction, paths, and planting was high on account of the rugged character of the ground. The size of the lots against which this charge was made, was about fifty by one hundred and fifty, this being about five to the acre. To this would have to be added about \$500 per lot for the cost of the land.

In Gwinn, Michigan, the cost of improvements on lots of the same size was \$240, which was subdivided about as follows:

Land	\$4.00
Engineering and designing	24.00
Sewers	52.00
Water	100.00
Bridges and roads	40.00
Planting	20.00
	<hr/>
	\$240.00

Here water cost was made high by a long supply main and land cost was very low. In neither of the estimates is the cost of housing included. The average cost of the

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houses, however, that were erected on both these undertakings to establish a standard for other houses, was from \$250 to \$350 per room, that is, the average cost of an eight room house would be about \$2,400. Of course there were many houses constructed in Gwinn at less cost than this, but very few as low as \$200 a room, because here a very substantial structure with a cellar is deemed necessary. This would make the cost of the best lot and house at both Gwinn and Ithaca about \$3,000, this representing a rental of approximately \$25 a month, which, of course, is much too high for laboring men with a family to house.

A workingman's house and lot should cost \$1,200 or under to give a ten per cent return on a rental of \$12 a month. So far I have only found one place in the north where a large number of houses and lots can be secured on such favorable terms, and this is in Flint, Michigan, a town that has grown very rapidly in the last few years. Here the manufacturing companies do not attempt to build houses for their employees. They have, however, secured large areas in land near the factories, have had plans devised for a system of roads and lots that would fit the ground and avoid unnecessary cut and fill, have made reservations, playgrounds, school and church grounds, and placed the lots on the market at such a low figure that real estate men could acquire the land, put up the cottages, and offer the homes to men at a monthly payment that would give them possession after a term of years. Here comfortable and substantial houses have been constructed for about \$150 a room.

The lowest cost houses I have found are in the cotton mill or mining regions of the south, where the average is \$100 per room or less, and where they are able to rent a four to six room cottage for from \$3 to \$5 a month and still get a fair return from the investment. These houses are on piers, and weather boarded on the outside, and sheathed or plastered on the inside, and the cost of land is low. It has been the policy of most of the southern

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mill corporations and many northern ones to build and own the whole mill village, this often being the only way in which it is practicable to secure the housing. With this ownership they could also control the character of the occupancy, and to a very large extent the policy of the town. While this is undoubtedly an advantage in the new cotton mill towns of the south, after a few years the cost of repairing wooden houses will cause a burden to the companies which they will wish to throw off as the margin on their mill profit becomes smaller, and the properties will fall into the hands of undesirable landlords, just as was the case in Lowell, Massachusetts.

Returning again to the low wage earners of the city slums upon whose labor industries with a small margin of profit must depend, it would appear that houses are being built at low enough cost to meet their needs, but if the cost of constructing the public utilities is added, then the total would be too great. I believe, however, by the omission of certain features that are regarded as essential, that villages for such purposes can be provided. In such a village there must be recognized the peculiar requirements of each people, their needs, customs, and prejudices.

To approach the ideals there must be a radical departure in the construction of these houses. Instead of cellars under all the house, concrete or brick floors should be used to reduce the cost of construction and the cost of maintenance. Instead of wooden walls that require constant painting, some form of stucco, tile, or brick should be used. In general a single story, the so-called bungalow type, is the least expensive to construct because a much lighter frame can be used, although on small lots the second story would probably be needed for economy of space.

In the construction of buildings local material can often be taken advantage of that is not generally accepted as suitable in planning, but in this respect one has to contend to a certain extent with local prejudices.

In planning an Arizona town I found that adobe covered

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with a local plaster called Douglas cement made an inexpensive, substantial house that was warm in winter and cool in summer, but the prejudice against adobe of which the "greasers' " houses were made was a very strong one.

In some sections an abundance of tamarack, spruce, and other even-tempered and even-sized poles can be secured. They would make low-cost studding upon which to place wood laths and plaster. In other places there are good clays that can be used in building up in the place of more expensive lime and cement. Near Toronto are mud houses of clay mixed with a binding material and plastered with lime plaster on the outside; these have stood for many years.

I give you these few various constructional notes simply to show what it is possible to do with local material. I recognize that to use such material advantageously, new men will need to be specially trained. It is a deplorable fact that the average mechanic will not and cannot use such material. In constructing a village, however, it would not be a difficult matter to train men to utilize the best available material that would tend to lower construction costs.

In summarizing my paper, I would say that much of the improvement of city conditions is to come through the construction of manufacturing villages for the lowest priced labor with all essential pipes, stores, schools, playgrounds, reservations, houses, and gardens, and with enough of the home character to attract different nationalities and to keep the cost within their income limit. This I am satisfied can be done when the capitalist is found who is not afraid to break away from the commonplace methods in vogue to-day. While I have had to do with the improvement of many employees' villages and have helped to reduce the cost of housing in some of these, I find that they are so averse to breaking away from the usual architectural and constructional methods, in other words, are so averse to making experiments, that very little real progress has yet been made along the lines that I have indicated.

THE CO-PARTNERSHIP PRINCIPLE

ROBERT A. POPE

Landscape Architect, New York City

THE co-partnership principle is important to us, first because of its twenty-two years of demonstrated success in England; second, because of its great possibilities as a social factor; third, because of its possibilities from an economic standpoint; and lastly, because it provides a practical medium for creating without delay convincing examples of ideal town planning.

The objects of the co-partnership movement are to promote the development of land, the erection of houses, and the co-operative ownership and administration of both, which, while avoiding the dangers that too frequently accompany the individual ownership of houses and speculative building devoid of public spirit, harmonize the interests of tenant and investor by an equitable use and distribution of the profit arising from the increase of values and the careful use of the property. And it is understood that these results shall be accomplished in the most ideal manner found practical and consistent with sound business principles.

These objects are accomplished by means of a company having two kinds of stockholders and two kinds of shares: first, the non-tenant shareholders who subscribe to the capital stock needed for the purchase and development of land and the erection of houses; second, the tenant shareholders who subscribe to a certain limited amount of stock which entitles them in due course to become tenants in the houses erected. The former capital or loan stock is limited to a four, five, or six per cent return on the investment;

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while the tenant shareholders' stock receives all profits above the interest on the loan stock. Installment payments on the tenant stock are provided for, making it possible for the poorest to subscribe.

The plan recognizes several very important principles. First, the necessity now of individual ownership of land. Where this has been accomplished, it has been possible to deal thoroughly and effectively with the housing problem. The second principle recognized is that the adequate and scientific planning of the land on which a community is to be built is necessary for the greatest economy of development, for the safest sanitary provisions, and for the highest esthetic ends. And third, that there must be limits to the population growth where the area is limited. Fourth, that the establishment of self-help and mutual help is a necessary part of any social reform. Fifth, and perhaps most significant of all, it recognizes the principle that a sound economic basis is essential to the *permanent* effectiveness of any effort for the general welfare. Among nearly a thousand societies in Germany, there has never been a failure. Many of those in England have shown a phenomenal success, in one instance more than seven per cent dividends have been paid to the tenant shareholders, while at the same time a better environment and better houses have been provided at a rate lower than had previously been obtainable. These dividends have been equivalent to a very material reduction of the rents charged.

From the social and economic aspects, equally important results have been secured. Death rates have been remarkably reduced, the standard of industrial efficiency through increased health very notably raised, while socially a community spirit has been created resulting in the greater happiness and contentment of the people afforded the opportunities of the co-partnership town.

The great significance of all these remarkable accomplishments which the Germans and especially the English have demonstrated as possible to the co-partnership plan is

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that the same results through the same medium may be accomplished in this country,—not in the distant future, but almost immediately.

The effect on the relief and prevention of congestion will be to demonstrate to the manufacturer now operating within the crowded city that the suburban location, under such conditions as the co-partnership plan provides, will notably increase the stability of his business and the profits to be derived therefrom. There are many public-spirited philanthropists and manufacturers in nearly every city, who are only waiting to be shown the feasible and practical way of accomplishing these ends, and we shall find that only one successful example in each community will be necessary to secure its repetition, with the result that many factories, together with their employees, will be taken bodily out of the congested cities.

In what other way can we so quickly and so well demonstrate to the people the importance of town planning? Certainly our present laws are almost prohibitive to accomplish the revision of the existing city plan, except in a very minor way; nor are they favorable to the proper extension of the plan for the future city. The “developer” and his investors are at present safely entrenched in their “individual rights” to make whatever plans they choose for their properties; and our cities seem ever ready to accept and maintain the results of their hopeless and expensive subdivision. In the co-partnership examples these developers will be forced to raise the standards of their work or leave the field.

Considering the present status of our municipal and State laws, I believe we may reasonably assert that five years of planning and campaigning will be usually necessary to secure the proper legislation that will make possible the most comprehensive town planning. Hence it is easily seen that any scheme which will promptly provide fine examples, will fill a great need and render a great service.

RELIEF THROUGH PROPER DISTRIBUTION OF FACTORIES

EDWARD E. PRATT

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CONGESTION of population, in all our great cities, is due in large part to the concentration and congestion of industries. New York City, the most striking example of the evils of congested population, well illustrates this fact, and I shall confine my remarks to conditions existing there. Fifty-five per cent of the employees in the factories of the entire city are working below Fourteenth Street in Manhattan, and in that little district there are more people employed in manufacturing pursuits than in any other city in the country.

Let us analyze the economic currents making for and against this concentration. Six of them are important:

1. The Advantages of the Market.
2. Inertia.
3. The Labor Market.
4. Transportation Facilities.
5. Industrial Betterments.
6. The Effect of Property.

1. First, the advantages of the market. By the market I mean the great mart of exchange, not only the buying and selling place, but also the center of production. The advantages of the market bring into existence within a city specialized commercial districts. Likewise the great city offers advantages to certain trades or special lines of industry. Hence there is manufactured in New York City

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over fifty per cent of the ready-made clothing and almost one-fourth of the entire product of printed goods in this country. Those industries which particularly need the centralized market are the producers of non-standardized products which vary in content and character from order to order.

2. The second force is inertia, which the economist would call the immobility of capital. In spite of sharp competition there are many firms, either on account of their prestige, a large or specialized plant, or mere lack of alertness, which do not respond quickly to economic forces. Inertia thus operates to preserve the *status quo*.

3. In the third place there is the great labor market which New York City has developed. Each new tide of immigrants has added to its richness. There are, however, other features in a great labor center, for quantity is not all. In a great city there is a constant shifting of workers from one establishment to another, — a constant source of annoyance and expense. Labor difficulties, a consideration of no mean importance, are apt to occur oftener, although with less disastrous consequences in the large labor centers. There are then many advantages in the great labor market, but there are also important and decided disadvantages.

4. In the fourth place there are transportation facilities. Of all the advantages which Manhattan can offer as a manufacturing center the casual observer would probably ascribe to them the first place. This opinion is, I believe, fallacious. The Borough of Manhattan and the other boroughs in lesser degree are *not* favored with good transportation facilities. It is quite true that a large number of railroads enter the city and that all the important ocean lines are at hand. Nevertheless the manufacturer located in Manhattan finds himself at a disadvantage because of the large expense of shipping goods. This is due to the great initial cost of placing his goods in the hands of the carrier, or the expense of trucking. The

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manufacturer outside of the city, however, usually has a switch and eliminates the cost of trucking, which is no mean advantage.

5. A fifth factor distinctly tending toward the removal of factories is the desire on the part of the employers to improve the working conditions in their plants and to permit their employees to live amid better surroundings than can be found in the city.

6. Sixth and last, there are the effects of property. By this I mean about what the manufacturer calls his overhead costs, charges which are exceptionally large in New York City. The value of land and buildings is rising rapidly: rents, taxes, insurance, light, and motive power are increasing apace. Today the employer in lower Manhattan will tell you quite frankly that if a girl cannot earn such and such an amount, she is no longer worth the floor space she is occupying. The problem is a serious one, and manufacturers are meeting it by removing their factories to less expensive sites in the suburbs or elsewhere.

These, then, are the important economic factors determining the location of factories, and the most important of them seem to be tending toward decentralization.

There has been a considerable movement of manufacturers from Manhattan, which has taken two directions. First, there has been a removal of factories to the outlying or suburban districts of the Metropolitan area. This is a distinct movement from the center of the city to its periphery. In the second place, there has been a movement from the city to more distant points entirely outside the industrial district of New York.

The industrial history of New York City furnishes several instances of the removal of entire industries. Iron foundries have long since ceased to exist in Manhattan; the stone and marble cutters found property too expensive and moved to the Long Island City waterfront; the boot and shoe industry needed air and light: it moved out of Manhattan, many factories going to Brooklyn. Some

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of the largest industries in the near-by Jersey towns were once located in New York City. The movement is going on slowly, but steadily. Factories are moving out of Manhattan and others are preparing to leave.

Many of these removals have been entirely successful, although some have been failures. All have had more or less trouble with labor. The general result of experience seems to indicate certain principles which hold in the main.

1. Labor will not follow factories if removed to a considerable distance.

2. Labor will not follow factories to the suburbs unless the neighborhood conditions are attractive and adequate housing facilities are at hand.

3. To insure a labor supply, the worker should be compensated in definite ways for the losses of city life, by providing recreations, amusements, and education for him.

Recent investigations which have been made in New York City show that no matter whether the factory is located in the most congested section of Manhattan, or in farthest Brooklyn, the distribution of population bears very close relation to the place of work and to the working conditions. The old theory that congestion is due to the congregation of nationalities which desire to live huddled together in little colonies, is fallacious. In studying the distribution of workers in the factories of New York City it has been found that in every instance it is the location of the place of work, and not the nationality group, which determines residence. There are deeper and more fundamental causes at work, some of which we have been considering.

Suppose we take a hasty glance at an actual case: we have here two groups of Italians, one working in Lower Manhattan and other working just at the Brooklyn end of Brooklyn Bridge. Each group is within easy walking distance of the downtown Italian district. Do most of them live in the congested Italian districts? Decidedly not! These are the facts:

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ITALIANS WORKING IN MANHATTAN AND BROOKLYN

	Living in Br'kln	Living in Manh'n below 14th	Living in Man'hn above 14th
Working in Manhattan	15.3 per cent	61.7 per cent	14.4 per cent
Working in Brooklyn	55.5 per cent	34.0 per cent	3.8 per cent

Not only do the employees tend to group themselves about the establishment, but when the establishment moves out of the center of the city to some near-by suburb, a large proportion of the workers retain their position in the new location and in the course of time a good proportion of them take up their residence in the vicinity.

These facts lead irresistibly to the conclusion that the removal and re-location of manufacturing establishments in suburban districts will materially lessen the intensity of the congestion of population, and that the regulation of the location of factories would in part at least prevent further increase of density

Distribution of factories does not necessarily mean the forcible removal of factories from the city at one fell swoop. It may simply mean the encouragement of proper distribution and the inauguration of preventive measures for the future.

The facts which I have presented point to one solution at least. The development of suburban industrial centers through private philanthropic agencies would greatly assist the tendency toward removal. The sites for such centers should be chosen with relation to the economic advantages of the place, with regard to water and rail transportation, ease of communication with the city, and the cost of land.

Given economic advantages, and factories can easily be attracted to these suburban centers. The function of the philanthropic agencies is to build up communities in these centers, to provide decent housing, to develop social activi-

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ties, and to furnish means of recreation and amusement. With legislation to prevent the recurrence of the abuses of congestion, bad housing, and bad working conditions, — and private initiative to provide good housing, attractive and beautiful surroundings, — and most important, the stimulus of activity which life in the city has rendered customary and necessary, the normal trend from the city to the suburbs would be tremendously encouraged.

After all, the best constructive social effort should seek to find the deep economic currents which are making for better conditions, and should aim to hasten and encourage them. There are these strong economic currents tending toward the removal of factories and the alleviation of congestion. To encourage and hasten them should be our object.

**THE CIRCULATION OF PASSENGERS
AND FREIGHT IN ITS RELATION
TO THE CITY PLAN**

THE PLANNING OF UNDEVELOPED CITY AREAS

NELSON P. LEWIS

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IN all cities the world over the older portions have grown from small beginnings, and the street plan which has been the result of this growth has been largely the result of chance, with an entire lack of appreciation of the essentials of a city plan, and with a failure to foresee the future growth of the city. It occasionally happens that a city is created upon a site deliberately chosen for a particular purpose, such as the seat of government, as in the case of our National Capital at Washington, or as a manufacturing city, devoted to one particular industry, as Gary, Ind., the new city established by the United States Steel Corporation on the shores of Lake Michigan. In such cases an opportunity is offered to create a plan which will be peculiarly adapted to the special development which has been in mind from the start. There are a few other instances in this country where the future possibilities of cities appear to have been realized when they were first laid out, and where admirable and dignified plans have been made. Indianapolis and Detroit might be mentioned as such examples. In New York City, on the other hand, the Commission created in 1807 to prepare a street plan for Manhattan Island failed entirely to anticipate the future growth of the city. This Commission appeared to believe that the chief traffic of the city would be across the island from the North River to the East River, and in

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order to accommodate this traffic, east and west streets were laid out at a width of sixty feet, with only two hundred feet intervening, while the north and south avenues, although given a more generous width, were placed from seven hundred to nine hundred feet apart. Except for Canal Street from Broadway to the Hudson River, and Broadway north of Madison Square, which followed an existing highway, this plan provided no diagonal streets of any importance south of One Hundred and Tenth Street. Probably it was believed that owing to the peculiar shape of Manhattan Island, with its great length and relatively small width, diagonal streets furnishing direct routes from one section to another would not be needed. We must give this Commission credit for courage in planning more than a century ago a system of streets extending to One Hundred and Fifty-fifth Street, and they were believed by their contemporaries to be visionary in the extreme in assuming that there would ever be any use for these streets on the upper part of the island. We cannot, however, credit them with having sufficient foresight or prescience to enable them to anticipate the marvelous development which was to take place on Manhattan Island and the other territory surrounding New York Harbor. The city having grown with great rapidity and the erection of very tall buildings having been made possible by steel frame construction, and the values of real estate having become enormous, it is now impracticable to correct mistakes or supply omissions in this original plan within reasonable limits of expenditure.

A characteristic feature of most American cities is the lack of important diagonal streets leading to some definite point of interest. These diagonals need not be long, or if they are they need not be straight for their entire distance, but different sections of them should as a rule be free from deflections, and where deflections do occur in their alignment, there should be an apparent reason for each such change in direction, which should also occur

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wherever possible at a point where other streets intersect, so that there shall be a series of foci, or points of interest, throughout the city. This is the charm of Washington and of Paris. One may follow any one of the numerous diagonal streets in either of these capitals and be quite sure of reaching some point of interest. A city plan which lacks these characteristics almost necessarily lacks proper sites for public or other important buildings or monuments. While, as already stated, it is often impossible to correct mistakes of planning within practicable limits of expense, there are few cities where conditions cannot be greatly improved without an expenditure which will fail ultimately to justify itself.

In most American cities whose growth has been conspicuous it will be found that additions have from time to time been made by extension of the city limits or by consolidation with other cities. Frequently these additions have already been exploited by the suburban developer; streets have been laid out and certain improvements have been made. They are often so limited in area that it is difficult to do anything but extend the already established city plan over them or accept the street lines which may have been adopted by the village or town authorities or fixed by the real estate developer. It occasionally happens, as in the case of New York, that an extension of the city limits will include large areas where there are a number of centers of population, and that these centers are disconnected and could be absorbed in a larger city plan without serious detriment to the latter. Areas of this kind contiguous to a large city are almost invariably traversed by highways which have been established for many years and which follow natural lines of traffic. These old roads are the logical routes for transportation lines such as electric railroads, and they could, and it would be safe to say they should, be made the controlling features of the city plan. They are generally of the ordinary country road width, that is, three or four rods,

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and occasionally only two rods. This width will be totally inadequate to the important part which they should play in the ultimate city plan, but they are usually allowed to remain until they have been so built up as to make a widening very expensive.

In making a plan for the annexed territory it will be found that in most cases the street system of the older city is extended over the new addition, or the crude street plans of the several villages and towns which have been absorbed by the greater city are prolonged until the different layouts meet in a confusion of unrelated street lines without system or symmetry. Then, in order to make the plans fit together, it is likely that a street will be laid out upon which they can abut, but which has no other reason for its existence. In other words, the plan of the annexed territory is the result of an attempt to enlarge and expand the old city plan or those of the existing centers of population, with no effort to study the problem as a whole or to grasp the possibilities of the territory as an integral part of a great city.

What, then, is the logical method of procedure? Do we first need an accurate topographical map of the entire area? This involves a large expenditure of time and money which, in the judgment of the writer, could be expended to better advantage. Let us assume that the unmapped areas are extensive, as in the case of those which were added to the City of New York at the time of consolidation. The first thing which it is necessary to do is to be able to determine the relative position of the different parts of the new territory and the different existing highways with respect to the remaining portions. This can only be done by a triangulation, which will establish points whose precise relative positions will be known, these points being, say, not less than two thousand feet or more than five thousand feet apart. It will then be possible to proceed with our mapping and planning in widely separated sections of the new territory with a positive knowledge of the rela-

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tion of the street lines which we will establish in one section to those which we are to lay down in another. The next thing which will demand our attention is the system of existing roads. There was, and is, a good reason for these roads. Their grades may be excessive in some places, but it is probable that their alignment has been sacrificed for easy grades at the time when they were laid out, when improved roads were almost unknown and heavily laden vehicles were obliged to avoid excessive grades. These roads should form the skeleton of our future street system. In many cases it will be necessary to straighten them, and in all cases to widen them, but wherever possible the new lines should be parallel with the old ones, so that the old roads may become a part of the new street with as little disturbance as possible and without sacrificing the trees. What width shall we give to these old roads which are to become the principal arteries of our city? In the writer's judgment they should in most cases be not less than one hundred feet in width, and in some instances even wider. It is unnecessary for us at this time to determine the subdivision of the streets which are to exceed one hundred feet in width, but if the old road was fortunate enough to have good shade trees, the original highway can probably be preserved for pleasure driving, while another section can be reserved for railroad tracks, and, perhaps, still another for automobiles, with adequate sidewalk spaces. Such an arrangement for the separation of different kinds of traffic will require a total width of about one hundred and fifty feet or even more.

These old roads which we are making the basis of our city plan may have been nearly parallel with each other or they may have been approximately radial, while the cross connections may have been infrequent or unimproved, but these cross connections will be a necessary feature of the final city plan which we have in view. They must therefore be carefully considered. They should be straight between the parallel or radial highways wherever possible

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and should join them at points where there are deflections. At these intersections there can well be an enlargement of the street area, creating plazas or spaces which will be available for a fountain, a monument, or some other decorative feature.

As soon as this system can be determined, the property required for the new streets, which we might, perhaps, call boulevards, should be acquired. The cost of this acquisition could properly be assessed upon the entire territory which will be developed by it as the benefit will not be merely local, but their establishment will be the first step toward the development of the entire suburban area. If the whole system of arterial streets could be acquired under a single condemnation proceeding, it would be most advantageous.

When these controlling streets shall have been definitely determined, we need not worry about the details of filling in the spaces between them. Our city plan is fairly safe. Whether it would be advantageous to have the intervening spaces treated in a uniform or conventional manner, is questionable. It is doubtful whether a regular plan is even desirable. Is Washington more beautiful than Paris simply because its great system of boulevards is superimposed upon a rectangular street system? To one who is studying the city merely as a plan, this might seem desirable, but the interest of the average citizen is not in the map; it is in the street system itself, and it might be preferable to allow these various subdivisions to develop along lines of least resistance, without exercising too much control over them. In fact, if the treatment of these different sections varies, a more pleasing result may be attained. Here, where the topography suggests it, a serpentine system of streets may be laid out; there, a generous depth of lots, with space for gardens and ornamental planting, may be provided; here, again, we may find a group of narrower streets compactly built up with secluded courts and with small houses fronting upon a little plot

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of grass or shrubbery. Agreeable surprises may await us in strolling through these various sections, while a short walk in any direction will bring us to one of the system of thoroughfares where the traffic, the business, and the amusements of the great city will be found. If one of these sections takes on a distinctive character, the neighboring districts will be stimulated to try and establish a character of their own.

If we attempt to establish an uniform cut and dried standard for all parts of a great city, it is more than likely that we will find that we have "leveled downward." In all large cities the individual is likely to be lost, the neighborhood feeling is unable to survive. It is frequently held that this neighborhood feeling is an evidence of provincialism, that it is inconsistent with the development of a great city and belongs only to the small town. This may be true if we leave the city as a whole to develop as an unrelated group of neighborhoods, for a comprehensive plan cannot be evolved by a town meeting, a civic association, or a group of them. The creation of such a plan needs a strong hand and a central authority which will be in large degree regardless of unimportant local interests. But, the general scheme once established by a system of thoroughfares such as has been outlined, the writer believes that a great degree of latitude should be allowed the neighborhoods and the individual developers, so long as the street lines and grades they wish to establish are not inconsistent with public convenience, with an abundance of light and air, with a rational and economical drainage system, and with good sanitary conditions.

No reference has yet been made to a system of parks and playgrounds, and the place which such a system should have in the city plan. This omission was intentional, as the writer does not believe that a park system should be a mere incident in the plan of a city. The policy of most of our cities, and with few exceptions this policy is especially notable in New York, has been to defer the selection of park

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sites until the necessity for park areas has become apparent, or until the public demand for them has become so strong that it cannot be ignored. Meanwhile, the entire city plan is likely to have been covered by a system of streets, many of which must be obliterated when the parks are finally laid out. It is scarcely necessary to say that the adoption of a street plan has resulted in the conversion of acreage property into city lots with a great increase in value. This value may be to a large extent speculative rather than real, but it is a value which will be reflected in the amount which the city must pay in the acquisition of the property.

It must be admitted that parks are a necessary part of any city plan, and that, therefore, they should be given a conspicuous place in designing a city street system. The writer, however, is disposed to go somewhat further and to maintain that instead of adapting the park system to the street system, the former should, to a considerable extent, control the latter. In other words, one of the first subjects which should receive serious consideration in the preliminary study of a city plan is that of available park sites. If there is a particular bit of woodland, an elevation with a commanding outlook, or even a piece of low-lying land traversed by a stream, which has not yet been cut up into building lots, it can be most advantageously set aside at this time as future parks. These reservations should be scattered over the entire area so that there will ultimately be some open space within convenient walking distance of every resident of the city. These parks should be connected by adequate roadways, not necessarily straight or even of uniform width, but contracted where the topography would involve expensive construction and again expanded to include a small area which might ultimately become a most attractive feature of our park and parkway system. As we are dealing with a territory which is at the present time suburban, and where detached houses are likely to be always a characteristic feature, it will not be necessary to provide large park areas, and yet parks of consid-

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erable size may be exceedingly desirable as playgrounds and places of recreation for those living in the more congested areas in the older parts of the city, especially if they are so located as to be easily reached by existing or prospective transportation lines. It may be deemed unwise, or even foolish, to assume that parks will be ultimately needed in the particular localities which we have selected. The city may not grow in the direction and along the lines which we have assumed, but, while it must be admitted that the manner in which any city will develop and expand cannot be predicted with any degree of accuracy it is not unlikely that this expansion will follow the lines of least resistance, and if encouragement is given by a judicious selection of park areas connected by adequate roadways, and if the controlling features of our street system are laid out along the lines already indicated, the future development is almost certain to follow these lines, and the result will be a city plan which will appear logical and reasonable, rather than a mere accident.

In a territory such as we have been considering it may be useless to speak of the grouping of public buildings, for the important municipal centers will have already been established and will not be moved. There are, however, minor public buildings, such as schools, libraries, public baths and comfort stations, police stations, and fire houses, for which provision must be made, and it would be most desirable to set aside here and there what might be termed "municipal blocks," upon which buildings of this kind could be grouped in a very effective manner. Our park areas and our "municipal blocks" should be acquired at as early a date as possible. It is often very difficult to justify a public expenditure in advance of actual needs when so many demands are being made for urgent municipal improvements in the older portions of the city, but a little foresight in this respect would undoubtedly save many times the sums which will inevitably be required to correct mistakes owing to lack of foresight in making provision for what is sure to be re-

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quired some day. The writer knows of no instance of the formulation and execution of a policy such as has been outlined, but it appears to be so reasonable and logical that it is a matter of surprise that the problem of making a city plan has never been undertaken in this manner.

It is not submitted as a rule to be followed in city planning, but as a suggestion which may be thought worthy of serious consideration and discussion, in the hope that it may be of some slight assistance to those who are confronted with a problem of this nature.

RAPID TRANSIT IN RELATION TO THE HOUSING PROBLEM

HENRY C. WRIGHT

New York City

OBVIOUSLY there is but one way to solve the problem of congestion of population,—that is, to take the people from a place where there is no room and put them where there is room. This simple-sounding proposition, however, involves the questions of how to induce the people to go, and how to get the real estate owners to furnish them a place; involves the questions whether they should and could take their work with them by moving the factories, or whether they should and could be transported to and from their work.

For the purposes of this paper let us assume that the people can be induced to go, an assumption on which there is a considerable difference of opinion. How can the real estate values be so controlled as to make it possible to provide small houses at a rent the working man can afford to pay? This involves a problem on which little light has been thrown. Can the American cities require of property owners that they shall not erect houses upon their land harboring more than a designated number of families, providing such houses be so built as to furnish sufficient light and air? Such questions have not yet been tested in our courts. If our municipalities do not succeed in procuring such rights, little is to be gained by a discussion of the best models of two or three family houses. These questions are of crucial importance and should receive the attention of our best legal minds.

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Having assumed, for the present, that the people will move out if given an opportunity, let us also assume that the city has the right, and can, by some means, limit the size of houses that may be placed on any lot. Let us assume, moreover, that factories can be induced to move to outlying districts. Our problem, then, would resolve itself into the alternative of whether it is better to have the factories move, or to permit the factories to remain in the central part of the city, and transport the working people to and from their work. Is it possible thus to transport them? This question involves the cost of constructing and operating transit lines, and the income they must receive to defray these costs. Can enough people be placed in a territory which would be served by a rapid transit line, who, by paying a five cent fare, would support such a line?

In attempting to answer this question, let us take a concrete example of a provisional line in New York City.

Suppose the open territory in the Borough of Queens be selected on which to build houses for working people whose work would be in the lower part of Manhattan. What kind of houses would it be necessary to build in order to accommodate enough people to support the rapid transit line? Let us suppose a four-track subway built from the Battery to Queensborough Bridge, thence a two-track road over the bridge, and from its eastern terminus a two-track elevated road extending seven miles. The cost of such a subway would be approximately as follows:

COST:

Permanent way,

Five and one-half miles of four-track subway, .	\$12,375,000
One and one-half miles of bridge track	125,000
Seven miles of two-track elevated	3,500,000

\$16,000,000

Equipment,

Tracks, signal system, powerhouse, cars, etc. . . .	\$10,000,000
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Total cost, \$26,000,000

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FIXED CHARGES:

Permanent way,

Interest on \$16,000,000, at $4\frac{1}{2}\%$	\$720,000
Sinking fund, \$16,000,000, at $1\frac{1}{2}\%$	160,000

Equipment,

Interest on \$10,000,000, at $4\frac{1}{2}\%$	\$450,000
Depreciation fund, \$10,000,000, at 2%	200,000

Cost per year \$1,530,000

Cost per day on the basis of 330 full traffic days . . . \$4,633

OPERATION:

Receipt of 100 passengers per car, at .05 per passenger .	\$5.00
At .10 per car mile, each car round trip will cost 28	
miles $\times .10$	2.80

Net operating receipts per round trip	\$2.20
Number of car-round trips necessary to pay fixed	
charges, 4,633	
220	\$2,106

Number of passengers to be carried at 10 per car 100 210,600

Number of persons riding at two fares per day . . . 105,300

We will assume the elevated portion of the road to serve a district of one mile wide by seven miles long, making seven square miles. In this district there must live a sufficient number of families to provide daily 210,600 fares. Since each passenger would pay two fares, including return trip, this district must furnish 105,300 people who daily use these cars. There are 7,680 twenty-five foot lots to the square mile, and in the total area served by the road, 53,760 lots. Estimating an average of one and one-half passengers from each family daily traveling to and from business, the 105,300 passengers will be furnished by 70,200 families. This would mean that there must be on each lot one and one-third families, providing all the lots of the whole district were to be built upon and occupied. As a matter of fact, probably fully one-fifth of any suburban community in some way serves the other four-fifths. After

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taking account of this fact, it will be found that each lot must accommodate, on an average, one and six-tenths families. This is on the supposition that all the lots of the whole district would be built upon, a supposition that would never be realized. A great portion of them would be unoccupied even after years of development. What would support the road during the years while this building was taking place? If such a road were to reach a period of large profit it might tide over the early years in which some loss is sustained. But no such period of profit would be reached. At the maximum possible development it would not be more than self-sustaining. How could such loss be provided for?

These figures are based on the assumption of no short haul traffic in the subway portion,—an assumption not entirely true. But the amount of short haul traffic that might develop would depend upon the location of the subway, upon its relation to other transit lines, upon the number of new subways that might be built, with which such traffic would be divided, and many other factors that could not be determined at the time of building the road.

Since it seems clear that a district located beyond five miles from the down-town terminus of a rapid transit line, cannot be occupied by small houses and support the whole of such line on a five-cent fare, it is vitally necessary to so locate, if possible, the trunk down-town portion of such subway that it will secure sufficient short haul traffic to cover the loss on the long haul business. The present subway enjoys the cream of such short haul traffic. It passes through the theatre, hotel, depot, and business districts, connecting all these together. It is owing to this fact that the present subway is a paying proposition. It will be difficult, however, to locate other subways that will secure equal advantages. In fact, it is difficult to see where more than one additional subway can be located that is likely to secure a large amount of short haul business. Since two, or at the most three, subways in the business district south

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of 59th Street will probably accommodate the short haul traffic, it is not easy to figure how additional subways extending into the suburbs can be made self-supporting when deprived of a large portion of this short haul traffic. This presents a serious situation and one that should receive extended and careful study, since it has a direct bearing upon the housing problem.

The foregoing figures and statements are based on the supposition that a rapid transit road of a type like the existing one would be built, thus necessitating the heavy fixed charges indicated. It may be possible to materially modify the discouraging conclusions resulting from estimating on such a basis. If a trunk subway were to have two instead of one elevated extension, it might nearly double the territory served without increasing the capital outlay more than one-seventh. Whether two such extensions could be built would depend upon the size and nature of the territory. Again, it might be possible to make one elevated extension serve a large territory by operating cross surface line feeders. The expense of such a method in the past has made it impracticable. A new form of storage battery car with a cheap and simple method of operation, may help to solve the question of serving a large territory by one rapid transit line.

There are some who believe that the suspended monorail type of road, as used at Barmen-Elberfeld in Germany, holds the greatest promise of a solution to our difficulties. It can be constructed somewhat more cheaply than an ordinary elevated road owing to the simplicity of its supporting structure, and possibly it could be used in the streets of congested portions of a city without serious objection, thereby obviating the necessity of building expensive subways. Traffic men generally, however, do not look with favor on an innovation of this character, so this type of road is not likely to win its way except after some years of testing.

Another means of reducing the capital charges is the

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possibility of assessing the cost of the portion of the road, beyond the congested part of the city, upon the property benefited. New York City has been empowered by statute to levy such assessments, and in all probability, the outlying portions of future rapid transit roads will be built in this manner. The assessment plan, however, will provide only for the extensions and not the trunk subways, and since the chief expense is in the trunk subway portion, the reduction in fixed charges will not be great. There must be other means found of reducing the fixed charges to be borne by the traveling public, before we can hope to house workmen in one- or two-family houses at a distance from their work that requires the daily use of a rapid transit line. It is very imperative that this whole question of means of reducing fixed charges, and the possibility of developing short haul traffic, should receive very careful study.

Let us examine briefly the proposition of removing factories in its relation to transit. In addition to the question as to whether or not workmen can be induced to follow the factory if it be moved out, there is another important consideration, namely, can the railroads furnish facilities for carrying the raw material to the factories, and for delivering their finished product to the markets that will enable the factories located in outlying districts to compete with those in the center of the city? At the present time there are marked advantages to many manufacturers in locating in the lower part of Manhattan near their market. They can pay the higher rent required in such a district and at the same time manufacture more cheaply than a similar factory located in the outlying district, owing to the fact that such outlying factory must pay heavy freight and express rates, and the service is slow in delivering the finished product to the market. As long as such conditions exist, it is almost hopeless to induce factories voluntarily to move out of the congested portions of the city. It is probably impossible or impracticable for the city to require factories to move to outlying sections. If this be true, their removal

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must be voluntary, and nothing will induce them to move except that they are enabled to manufacture and to deliver their product to the market as cheaply from the outlying district as from a location close to the center of the city. These are very large questions that not only require a great amount of study, but before they are solved they will require a radical change in policy on the part of railroad corporations and factory owners.

Suppose, however, that the conditions we speak of are so altered as to make it feasible for the factories to move out, and that they would so move and locate in open territory where workmen's houses could be built within walking distance of their work. What transit would then be needed? The factory districts must be located along railroads that transport freight and express. Such a location brings with it certain advantages. It gives transit facilities to workmen for occasional visits to the city. Its chief advantage, however, is the additional income that accrues to the railroad by the handling of freight and express. This should enable the road to furnish low commutation rates that would permit business and office people to live along the line and to travel daily to down-town sections of the city. This is more or less the normal condition that exists in connection with all steam roads entering large cities.

This fact prompts the question whether the bulk of the rapid transit needed by large cities cannot be better furnished by roads that also handle freight and express. In fact, it seems to be the only feasible method for cities having less than a million population. The profit from the freight and express traffic would be substituted for the profit arising from short haul traffic of large cities whose business district is spread over a large area. The entire rapid transit of Buenos Ayres in South America, a city of a million and a half population, is handled by steam roads coming to the center of the city over high re-enforced concrete viaducts. During the rush hours fifteen to twenty car trains are operated on a two-minute headway. In Pittsburgh the railroad

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depots are very near the center of the city, and with little difficulty could be brought still nearer. Since her population is probably not large enough to support a rapid transit road devoted solely to the carrying of passengers, possibly the most logical solution of her rapid transit problem would be to secure it by means of her existing railroads. These, however, should be electrified, and a system of cross feeding developed.

The difficulty of using railroads for suburban purposes in most cities is that their terminals do not come sufficiently near the center of the city, and in reaching the city they do not run through attractive districts. It is a question worthy of study to ascertain whether, for the purpose of rapid transit to suburban territory, spurs cannot be extended into the business and shopping district, and whether cross feeding surface lines can be operated to advantage in connection with such railroads.

It has been repeatedly suggested that a rapid transit line may be made self-supporting if the zone system of fares be adopted. The theory would be that a passenger would pay an amount proportionate to the distance that he travels. This system is operated in many foreign cities. But theoretically and practically it tends to increase rather than decrease congestion of population. Inevitably it concentrates people in the fare zones. Such a policy as this might make rapid transit lines self-supporting, but it would not aid in the solution of the problem of congestion. The effort in this country should be to find some means of making rapid transit lines self-supporting on the basis of a uniform fare for all distances within the city limits, and possibly extending beyond these bounds.

The points set forth in the paper may be summarized somewhat as follows:

1. Rapid transit lines of the subway type designed to be self-supporting whose income is received from the carrying of passengers alone, can be built only in the largest cities, and even in such cities only such lines can be

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self-supporting as will secure a large amount of short haul traffic.

2. The only means by which more lines can be built than are needed to provide for short haul traffic, is to reduce the fixed charges of such roads either by lessening the cost of construction, or by placing a part or the whole of such cost upon the property benefited, or by extending the zone which such rapid transit lines will serve by some economical system of cross feeders.

3. Apparently the only possible way of providing rapid transit for cities that furnish little short haul traffic, is by means of railroads whose income is secured in part by carrying freight and express, or by assessing a large part of the construction cost of such rapid transit roads upon the city, or upon the property benefited.

4. The removal of factories seems to be the most hopeful method of relieving the congestion of population, but their removal is dependent upon the willingness of workmen to follow them, and upon the willingness of railroads to furnish cheaper and better facilities for the moving of freight and express matter.

Nearly all the points in this paper have been built upon suppositions, — suppositions of conditions that may or may not be brought about. Whether or not it is possible to bring these conditions about can be ascertained only by a great amount of detailed study. Some of the information at present most needed may be indicated by the following questions:

1. What are the rights of States or cities to restrict the use to which land may be put?

(a) What are the constitutional rights of the various cities enabling them to restrict the use of property?

(b) What restrictions have thus far been enacted by States or municipalities?

(c) What court decisions have been rendered touching this point?

(d) Necessity for restrictions. Illustrations.

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- (e) What kind of restrictions probably can be enacted?
- (f) What kind of restrictions should be enacted?
- (g) What would be the probable effect upon the present and future values of real estate if proposed restrictions be enacted?

2. Can factories be removed?

(a) Why do factories remain or locate in the congested part of the city?

(b) What freight and express facilities would be afforded factories which move out?

(c) Will workmen follow factories which move out, and if so, under what conditions?

(d) How are houses to be provided for workmen in connection with the factories that may be moved out?

(e) How much of a civic and amusement center is it necessary to develop to induce workmen to live in outlying sections?

(f) What has been done along this line in other cities in this and other countries?

3. Can workmen be moved to and from work by rapid transit lines?

(a) What are the costs of constructing and operating various types of rapid transit lines?

(b) Can workmen afford to use such roads on a five cent fare?

(c) Can workmen's fare be inaugurated and maintained on such roads?

(d) To what extent can railroads be extended through the business district of cities for the purpose of distributing passengers?

(e) To what extent can cross feeders be used for the purpose of serving large territories with rapid transit?

(f) Is it possible to assess a part or the whole of the construction cost of rapid transit roads upon the city, or upon the property benefited?

(g) Can railroads afford to furnish better freight and express service?

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(h) What effect would a subway and elevated system for the transportation of freight and express, have upon the location of factories and the housing of workmen?

(i) What facilities, methods of operation, commutation rates, etc., would induce office and business people to locate along railroads which also carried freight and express?

SEAPORT CONGESTION AND ITS RELATION TO TRANSPORTATION, AND TERMINAL FACILITIES

HON. CALVIN TOMKINS

Dock Commissioner, New York City

WITH rare exceptions, American seaports are unprovided with adequate waterfront terminals such as exist at European ports of the first order.

In America, railroads, as a rule, provide their own waterfront terminals without co-ordination in plan or proper relationship to the local commerce of the city or to steamer terminals. This lack of proper organization has resulted in great disorder and congestion.

Warehouses with rail connections are necessary adjuncts to a complete waterfront improvement, and yet the great port of New York is provided with only one such general terminal about its spacious harbor, namely, the Bush Stores in South Brooklyn. Different kinds of freight are not segregated as they should be at points where they can best be handled or exchanged between carriers, but all kinds of water-borne freight are landed all about the harbor of New York, involving the needless use of docks and slips urgently required for the reception and export of the products destined for the immediate back territory, or originating there, and seeking export.

A very large part of the most congested dock front of Manhattan is devoted to the use of southern coastwise steamers which principally bring up cotton, yellow pine, and naval stores, and take away coarse manufactured goods. Both these classes of commodities could be more cheaply and conveniently handled at an outlying local terminal, to

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the great relief of local congestion and the furtherance of the manufacturing interests of the city which are now hampered by heavy truckage charges. There is no reason why exchanges of freight in transit between carriers cannot more advantageously be made in outlying districts than at the center of the city. As a matter of fact, railroads do sort their freight in transit at suburban transfer stations, and the tendency is becoming more and more pronounced to bring only the commodities needed, to the congested central district.

The Erie Canal has never been provided with adequate terminals, either at New York or at Buffalo, and this has largely accounted for its comparative inefficiency as a regulator over railroad freight rates. The congestion of the railroads will shortly force the utilization of the waterways for the carriage of coarse freights in the United States, just as the waterways of Europe are now being availed of to help out the railroads, particularly in Germany, France, Holland, and Belgium. At New York, we need provision for the reception and shipment of freight all around the harbor; and while it should be the policy of the city and State to provide specific, well-equipped canal terminals in South Brooklyn, on the west side of Manhattan, at Staten Island, in New Jersey, in Harlem, and elsewhere, it is of equal importance to provide open piers at convenient intervals along the waterfront of the entire port, so that canal boats and lighters can effect landings. In this sense, the entire port should be considered as a terminal for the canal traffic and the railroads. We have too many separate individual steamship and canal terminals and too few general terminals available to all. In other words, through the instrumentality of long leases made to private corporations, the waterfront has been crystallized into small, separate operating units, each of which is under the control of a private corporation. Such corporation cannot individually afford to provide the modern terminal equipment necessary to store and handle freight cheaply.

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A comparison of the methods of American cities with those in use at Liverpool, Hamburg, Antwerp, and Rotterdam is very much to our disadvantage.

Transportation corporations must hereafter co-operate with each other and with the city, if we are to avoid the expense and inconvenience which have grown up under present individualistic methods. About New York harbor, there are approximately four hundred and fifty miles of waterfront, over one hundred miles of which are available for ocean commerce; and yet through lack of organization, great congestion exists along parts of the Manhattan waterfront, while other districts, almost equally available for general uses and quite as available for specific uses, are entirely neglected.

Our docks are used for storage warehouse purposes, and commodities are delivered in a most expensive way, and most productive of congestion by trucks, when they should be received in adjacent storehouses, directly from the railroads, canals, and steamers.

Mr. J. J. Hill has recently stated that the great problem which confronts the railroads is not provision for additional trackage or equipment, but for terminals in the large cities. The increase of land values makes the provision of such terminals very difficult unless the co-operation of the city shall be secured. Perhaps the main difficulty experienced in breaking up congestion and providing proper organization is the fact that it is a hardship for one steamship or railroad line to establish a terminal at an outlying district; but if several railroad and steamship lines should coincidentally migrate to an outlying district in the port and arrange for the reception, exchange, and shipment of coarse freights, or freights in transit, at such terminal, the problem would become a more simple one.

The difficulties of providing for all the corporations which require deck room at the center of the city are now becoming so pronounced that a disposition is developing among the carriers themselves to co-operate with the city

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and with each other. If instead of providing mere dock facilities at outlying points, the city, in co-operation with the carriers, shall plan for a series of terminals equipped with railroad and warehouse facilities, the cost of handling commodities can be greatly reduced to the advantage of the general commerce of the city, and to the advantage of the steamship and railroad companies as well.

Manufacturing industries around New York will also be greatly benefited by a cheaper process for bringing in and sending out raw materials and finished products. The expense of truckage now constitutes an abnormally high charge which can well be minimized.

New Orleans is endeavoring to solve its harbor terminal problems under municipal direction; San Francisco under the supervision of the State of California; Montreal under the supervision of the Dominion of Canada. The latter city has planned an admirable terminal system, which, when finished, will compare favorably with the facilities afforded by Hamburg and Liverpool.

New York has made large expenditures for dock construction without provision for the other adjuncts which go to make up modern terminals; and it has leased the expensive docks which it has constructed to private corporations for long terms, so that it has temporarily lost control of the situation. Its policy hereafter should be to break up undue congestion in Manhattan, and to establish terminals as distinguished from mere waterfront improvements at strategic points about its harbor waters; and at the same time to provide at needed intervals along the entire waterfront occasional open piers for general commerce and coarse freights.

RAILROADS—THE FRAMEWORK OF THE CITY PLAN. THE PROBLEM AND ITS STUDY

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AN OUTLINE

I. THE PROBLEM:

FIRST—THE DOMINANT ISSUES:

A—Suburban Traffic.

B—Local Freight Delivery.

SECOND—ITS IMMEDIATE IMPORTANCE:

A—The need of one flexible and enduring system.

B—The introduction of operating economies.

II. THE INVESTIGATION:

FIRST—THE POINT OF VIEW:

SECOND—THE SCOPE:

THIRD—THE METHOD:

III. THE ANALYSIS:

FIRST—DIFFERENTIATION OF DISTINCT CLASSES OF SERVICE:

A—Passenger.

B—Baggage, Express, and Mail.

C—Freight.

SECOND—ELECTRIFICATION:

THIRD—PASSENGER TRAFFIC—SERVICE DEMANDS:

A—Unified *vs.* Independent Operation.

B—Through *vs.* Terminal Operation.

C—City Distributing Circuits *vs.* Transfer Stations.

D—Inter- and Intra-System Transfer.

E—Additional Stations.

FOURTH—FREIGHT TRAFFIC—SERVICE DEMANDS:

A—District System of Delivery.

B—Transfer Stations.

C—Additional Stations.

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FIFTH — PROGNOSTICATION:

- A — The positions and relations of commercial and housing centers.
- B — Traffic Burden and Direction.
- C — Territory for the expansion of units.

SIXTH — OPERATING ECONOMIES:

- A — Initial.
- B — Ultimate.

IV. *THE PLAN*:

FIRST — PRINCIPLES UNDERLYING THE DESIGN:

- A — Unification of Physical Properties.
- B — Electrification.
- C — Flexibility.
- D — Joint Control and Operation.

SECOND — METHOD OF PROSECUTION:

- A — By Joint Railroad Managements.
- B — By a Terminal Corporation.
- C — By Municipal or State Participation.

THIRD — WAYS AND MEANS:

FOURTH — OPERATING MANAGEMENT.

The first chapter in the report, the heavy lines on the plan, the primary members in the city frame, must rightfully be dedicated to lines of transportation, the railroads.

The problems of congestion of population, co-operative housing, playgrounds, and parks, civic centers, industrial development, and others of equally great importance, when not entirely independent of the question of transportation, must be considered as secondary thereto.

The outline presented suggests a few of the chief points which are believed to be essential for consideration in any exhaustive study and analysis of a terminal transportation problem.

It is not the purpose of this paper, even though time and space permitted, either to discuss the opposing aspects of the features under the various headings of the analysis, or to describe a general layout of the ultimate system which it may be desirable to attain in the plan. These questions

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are all subject to consideration and discussion by eminent transportation engineers. Of more immediate importance than the actual determination of the various features of a terminal transportation system with their prescribed functions, and parts of the study which apparently have received little, if any, consideration in recent investigations, are the necessary and fundamental preliminaries, first, of concrete ideas as to what the problem really is, second, as to the method of pursuing the investigation and study to an issue where definite recommendations are warranted.

The dominant issues of the problem are:

A. *Suburban Traffic* — the means of carrying present and future generations of the working population of great centers, safely, cheaply, conveniently, and quickly, between commercial districts and housing communities.

B. *Local Freight Delivery* — the means of handling with dispatch and economy food stuffs, manufactured products, and raw materials for local delivery, for local shipment, or for trans-shipment.

The handling of suburban passengers direct, without transfer, and the delivery of local freight at the delivery station which entails the shortest team haul for the shipper or consignee, represent more or less ideal conditions in the design of an enduring system of terminal transportation which will be impossible of complete attainment in most instances, but which should be worked to. It is interesting to consider for a moment why the question of terminal transportation is to-day receiving so much consideration within the respective confines of nearly all large centers in the country. Consolidation in the last twenty years has been most apparent among the railroad companies, and notwithstanding the possible adverse views of those now giving the subject serious consideration as to the advisability of further consolidation, it seems obvious that the psychological moment has arrived, and that it is now incumbent upon railroad managements jointly or severally to decide this question of policy, namely, whether further

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development within terminal communities is warranted along independent lines in order to perpetuate independent features in a terminal system of dissociated properties, or whether in the interests of public service as well as to effect ultimate operating economies, it is better to pool interests and plan for an enduring and unified system.

There is no doubt that within the next ten years the necessary expenditures for the extension and reconstruction of terminal features alone of existing transportation systems will exceed the sum which has been expended in the last ten years on terminal features as well as on trunk line extension and improvement. The advantages to be gained by effective consolidation can hardly be overestimated, and it is essential that these necessary expenditures be authorized only after an exhaustive study of the situation with a view to the ultimate unification of the properties.

The immediate importance of the problem is due to the imminent need of plans for effective consolidation, in anticipation of possible independent development or extension by competing interests, in order:—

A. To provide one flexible and enduring system of terminal transportation which shall represent the most efficient type of public service, offering like advantages to all patrons.

B. To introduce economies of management, operation, and maintenance of the properties, not possible under independent control, which will make for more efficient service and cheaper ultimate rates.

The question next arises as to the best method to be adopted in the attack and prosecution of the study and the plan. With few notable exceptions, those who may be considered experts on the subject of railroad terminal transportation are in the employ of the railroad companies themselves. They are employed by and owe allegiance to corporations competing in a field dotted by other important interests, and at present doing business along competing lines. Their point of view as a rule is inconsistent

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with the aims of a study towards the eventuation of a plan for ultimate unified development.

It is inconceivable in any broad study of the situation that the proposition should be attacked by territorial sections or by corporate divisions. The view point must be at a pinnacle which will make possible a three hundred and sixty degree view of the situation, and the study and analysis carried out to that final state which will demonstrate the absolute correlation between systems and units of the existing terminal lines and features themselves, and with public service requirements. Of particular importance in connection with the study of the problem is the elimination from the minds of the investigators of any territorial or subject limitations which must confine the investigation. Before intelligent and definite recommendations are warranted, the study and analysis must be carried to a point which not only establishes the proper relation between the various arteries, with other functional units of the transportation systems themselves, but must as well consider contiguous and even remote features of the City Plan. Although from a casual survey, local conditions territorially remote from the railroad properties may appear to have no bearing on the plan, a careful and exhaustive analysis will often demonstrate relations which are intimate.

It is, furthermore, manifestly unfortunate to assign to a commission or to any expert the study and analysis of one single system of terminal transportation, that is, either the present steam railroad properties, the so-called rapid transit lines, or the surface car lines. The component parts of the problem cannot properly be isolated. There is a distinct and proper relation between the functions and physical properties of steam railroad properties and rapid transit properties, either existing or proposed, and until this relation is determined or prescribed, it is impossible, either in justice to the expert or Board of Engineers handling the problem or to the tax-payers of the community, intelligently to recommend the proper lines of development. The entire

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problem must be considered and attacked as a unit, and the development of the system as a whole should entail the consideration of all transportation routes, and should not be confined to one system, however intimate points of articulation with other systems may be proved.

The experts on the subject are in the main employed by the railroad companies. From them should come the real work on the study and plan.

The proper point of view alone is lacking, and it therefore remains for a public body to outline the process of investigation, and to harmonize the diversified interests.

It is believed therefore that the enactment providing for the appointment of the public commission should go further and provide also for the appointment of one representative from each railroad corporation having interests within the terminal district under consideration. These representatives should be appointed by the respective railroad managements and should be the acknowledged experts in the field under consideration.

Perhaps no more definite expression can be found as regards the proper view point of the board of railroad experts than that the problem should be undertaken as though the assignment came from the management of the combined interests, with instructions to develop plans for the ultimate effective consolidation of the properties, with a view to establishing an enduring system, susceptible of the greatest operating economy consistent with the demands of public service.

This departure of providing for an official body of railroad experts, who know the art and who are familiar with the field under consideration, will go far towards ensuring the elimination of impracticable recommendations, an element which in the past has limited the value of many exhaustive reports.

Upon the commission with its consulting engineer would devolve the duty of prescribing the general lines of the investigation and the analysis preparatory to the develop-

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ment of tentative general plans, and the study of alternate plans and estimates with all pertinent data, pending definite recommendations.

Except for continuing the salaries of these representatives, it is believed that the railroad corporations should not be asked to contribute anything toward the investigation, but that all expenses incurred in connection therewith should be paid by the State or municipality. In connection with the cost to State or municipality of conducting investigations toward a plan for unified railroad terminal development, the term "economy" should not be confounded with that of "initial expenditures." Appropriations for the purpose of conducting these investigations are strictly in line with ultimate economy, and those disclaiming proposed expenditures for this and like purposes are actuated by principles of false economy.

There is little doubt that the thousands or even hundreds of thousands of dollars of expenditures which may be incurred by States and municipalities within the next few years, for the purpose of intelligent and thorough analysis of this problem, will return many fold to coming generations, who, instead of wondering at the lack of foresight of their progenitors in allowing development along lines of least resistance, will commend the judgment of those who, foreseeing the needs of the future, provided for the laying down of an ultimate and enduring system of terminal transportation for the betterment of the commercial and housing interests of the community, and the general welfare of the inhabitants.

STREET WIDTHS AND THEIR SUBDIVISION

JOHN NOLEN

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OF all the features of City Planning, streets are the most important. They are the framework of a city. Everything else depends upon them. They control and regulate the development in the center of a city and ramify to the remotest corner. No other feature is so permanent, no other so difficult to change. Streets, also, have the most direct and intimate influence upon the economic, sanitary, and æsthetic development of city life. Therefore, every decision with regard to the street is important, its location, its width, its right subdivision into roadway and sidewalk, and its furnishing. With but few exceptions these decisions concern the general public far more than the individual or group of individuals who happen to own or rent property on any particular street under consideration. Thus the settlement of these matters, it would seem, should rest in public hands and the decisions should be made primarily with regard to public interests.

Different streets have different functions, and every street is related directly or indirectly to some other street. Even in small towns there is good reason for a considerable variety of streets, and in a large city a complete system is demanded. Some streets are primarily business streets; some by virtue of their location and grade are thoroughfares; some, for other reasons, are the natural arteries for electric car lines. Some streets in every city are for modest residences, some for large private places, while still others are or might be adapted for pleasure drives. These varying functions require varying treatment, and varying treatment

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is not likely to be discriminating, skillful, and effective unless initiated, executed, and controlled by public authority.

A comparison of the practice of a number of American cities with regard to the laying out of streets shows considerable variety. The differences, however, appear to be due more to accident and habit than to forethought. In the matter of streets, Europe has much to teach America. Even the smaller cities and towns there show wisdom and skill in this matter, and in the larger cities it is a highly developed art. On the other hand, the practice of American cities, almost without exception, is commonplace and childish, lacking in intelligence, skill, and forethought. The result is an almost infinite waste of time, money, and opportunity. The fact that Boston has spent about forty million dollars since 1822 in street widenings, straightenings, and extensions shows the extent and gravity of the problem, and Boston streets are not all wide nor straight yet. It cost the people of the little town of Brookline, Massachusetts, six hundred and fifteen thousand dollars to widen Beacon Street from fifty to one hundred and eighty feet for a distance of two miles. It should be added, however, as showing the value of properly located, wide streets, that the change resulted in an increased real estate value in six years, for an approximate distance of only five hundred feet from the side lines, of over four million dollars. The results in Kansas City, Missouri, are equally significant.

The two most urgent needs of American city street planning are a greater differentiation in the width of streets, and an apportionment of any given width so as to meet more successfully the demands of travel combined with due regard to the streets' appearance. To provide for these imperative needs calls for a more intimate knowledge of traffic, of existing local conditions, and of the probabilities of the future, together with wide experience in outdoor design.

NOTE — After this brief introduction, Mr. Nolen proceeded to illustrate the subject with lantern slides.

COVERED WAYS FOR A BUSINESS DISTRICT

SYLVESTER BAXTER

Secretary Metropolitan Improvement League, Boston

ONE of the ways of planning the economic growth of a city, and one that appears to have received little or no attention as yet, would enable a given district to be readily shaped for comfortable movement on foot throughout a crowded business section. The want of such facilities entails upon merchants great losses when the weather is inclement. Only such customers as are prompted by immediate necessity then venture to brave the discomforts of rain, or snow, or blustering weather. But when persons can step into a street car at their door, and be transported to the shopping district, there to wander from one end of it to another, dry shod and under cover, the encouragement to disregard bad weather is great. Hints for such forms of development are to be obtained from existing conditions in various parts of the world. In old cities a very narrow street is usually a more popular shopping thoroughfare than a wide one. Cases in point are such streets as the Obispo in Havana, the Ouvidor in Rio de Janeiro, the Florida in Buenos Ayres, and Winter Street in Boston.

In streets like the Ouvidor and Florida vehicular traffic is excluded through the day and the flagged or asphalted pavements are given over entirely to pedestrians that throng them. In the Obispo and the Ouvidor the streets are in hot weather covered in with awnings from roof to roof. These not only afford grateful shade; in a measure they give shelter from rain. A higher development in the same direction are the monumental passages, common in many European

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cities, as in Milan, Turin, Paris, Berlin, and Leipsic. The celebrated Arcade in Providence, Rhode Island, has been a feature of that city for more than fifty years.

Some of the great office buildings in New York and Boston have modifications of this arcade idea, with a corresponding bazaar-like development, as in the Hudson-Terminal buildings in New York and the Old South Building in Boston. Other elements for a comprehensive development of the sort are suggested by the entrances to great shopping establishments from the subways in New York and Philadelphia, and in one instance from the Washington Street tunnel of the Boston Transit System. Still others are the passages beneath streets by means of subways between sections of a great mercantile establishment, or for entering a place of amusement.

These elements suggest how such features might be employed in a comprehensive scheme for basement connections between all the establishments in a shopping district. It should not be difficult to plan an effective co-operation between the municipality and the merchants by utilizing the space beneath the sidewalks, belonging to the city, for continuous passageways along the basement fronts, and connected across the streets at all the intersections and perhaps at other convenient intervals. Such a sub-sidewalk would be of great value for merchants and the public alike.

A larger scheme, however, would involve the reshaping of a whole district for a well planned system of covered ways. A specific instance that invites such a scheme is that of the Park Square district in Boston. Large plans are now taking shape for adapting this territory to the business uses invited by the valuable business sections adjacent. These plans will provide among other things two main thoroughfares, Boylston Street and Huntington Avenue (or St. James Avenue), and between them a narrow alley-like way running between Clarendon Street and Park Square. This narrow way might easily be roofed with glass and developed in attractive architectural fashion. It would be inter-

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rupted only by two transverse thoroughfares, Berkeley and Church Streets. These could be crossed by subways with inclined approaches.

A natural objection would be the circumstance that Providence Street and the continuing alley are now service ways for the mercantile buildings on Boylston Street. This use, however, could be retained by maintaining the thoroughfare as a subway at the basement level, flooring it over with a suitable pavement for pedestrians. It would thus relieve the two great thoroughfares on either side with accommodations for service traffic, such as might be performed by motor-trucks, for delivery and collection of merchandise and supplies. The retail establishments on both these great streets would then have two exceptionally favorable shopping fronts, one having reference to street car traffic and the patronage thus brought, the other would be thronged by pedestrians moving from shop to shop under the most inviting conditions.

This covered way, with its length of something like two thousand feet, would make a highly attractive feature for the two large hotels on Boylston Street that would connect with it. The reduced cost of heating in consequence of the sheltered way along one frontage of the abutting buildings, should be a considerable item of economy for the property owners.

A feature of the city plan, that, unlike that of New York, is almost universal in Boston, lends itself to the economical realization of the form of improvement here suggested. Parallel with nearly every street there runs a service alley, connecting with the back yards of the houses. This prevents the obstruction and disfigurement of the street sidewalk with ash-barrels, garbage receptacles, and the like. When a residential section is changed over to mercantile uses the value of this feature is correspondingly enhanced. A large portion of the high-class residential district is now rapidly changing to mercantile uses. It would be a comparatively easy matter to convert these alleys into covered ways in the

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manner here suggested. A comprehensive plan for a systematic carrying out of the idea might be agreed upon between the city government and the property owners, to be gradually realized, block by block, as the change from a residential to a mercantile character took place. These alleys were originally private ways, as a rule, but with few exceptions they were taken over by the city for hygienic and policing reasons, some years ago.

It is conceivable that, in the ways here suggested, the entire mercantile portions of a great city might be honey-combed with foot-passages so that persons might traverse it from one end to another in all parts without the necessity of once exposing himself to rain, snow, or cold. The desirability of a scheme of this sort is not readily convincingly evident, even for the mercantile community. Suggestions for such new departures are commonly met with all sorts of objections on the score of impracticability. But, could one good object lesson be presented, it seems likely that the benefits would become so apparent as to lead to the general adoption of the idea as a feature of the better city of the twentieth century.

**SOME PROBLEMS OF LEGAL AND
ADMINISTRATIVE PROCEDURE
AFFECTING THE CITY PLAN**

EXCESS CONDEMNATION AND PUBLIC USE

ANDREW WRIGHT CRAWFORD

of the Philadelphia Bar

MY subject sufficiently indicates to you that I am to discuss the legal aspects of taking by eminent domain more land than is absolutely needed for a public improvement, such as a parkway, in order to sell the excess portion and recoup the expense in whole or in part.

To see a new proposition in perspective it is sometimes an advantage to compare it with another new one that is attracting public attention. I propose to compare the proposition that I will contend for with the proposition that has split the United Kingdom into factions. I refer to the Lloyd-George budget. That budget proposes to take by taxation from an individual owner 20 per cent of the unearned increment of the value of his land. The increment has not been earned directly by the individual and has not been earned directly by the community. It has resulted from gradual increase in values from diverse causes. The budget proposes to take 20 per cent of this increase without any individual return to the land owner taxed. Of course he will share in the general benefits of government which is carried on by means of taxation, but no return peculiar to him will be given.

In the case of excess condemnation the proposal is to secure to the individual everything that he owns at the time of the condemnation. This includes any unearned increment that has accrued to him as well as any increment earned by him. By this proposal the State must pay him for everything that he now has. A return peculiar to him will be given,

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and that return will cover all the value of the land at the time of condemnation. But the State says: "We, the State, propose to spend taxpayers' money upon your land, as a result of which a certain portion of your land which is not required for the particular work in hand will be greatly benefited in value. This benefit will not be an unearned increment, but, on the contrary, it will be an earned increment. That earning will not be your earning, but an earning by money paid by taxpayers. We propose that they who sow shall reap and that, the taxpayers' money having produced the increment, the taxpayers shall receive the return, through the State."

In the case of the Lloyd-George budget an unearned increment, unearned either by the individual or by the State, is taken by the State without return to the owner. In the case of excess condemnation nothing is taken from the individual for which he is not paid. He is paid well, and, in fact, overpaid in the majority of cases of condemnation of land for any purpose. There is taken from him, without return, the hope of an increase that may come through the expenditure of the public's money.

The questions to which this address is directed are two: Is the taking of private property not absolutely necessary for a specific improvement, as, for instance, a public street, which property abuts thereon, at the same time that the property for the street is acquired, in order to sell such excess property at an advance for the sole purpose of recouping the expense of such improvement, a taking for a "public use"?

If this question must be answered now in the negative, is the taking of private property contiguous to a park or parkway and within a reasonable distance thereof, say two hundred feet, in order to protect such park or parkway and its environs, and in order to insure the preservation of the view, appearance, light, air, health, and usefulness thereof, by reselling such property with proper restrictions to these ends, a taking for a "public use"?

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In our three-headed system of government smooth co-ordination can be secured only by each department recognizing the inviolability of the territory occupied by the other departments. The judicial department must by virtue of its authority decide as to the validity of actions of the executive and the legislative branches of the government. But, realizing the delicate character of their function when they declare an act of either of the other two branches of the government unconstitutional, the courts do so with great reluctance and only in clear cases. When, as in the case of the present proposition, the question for determination is largely one of fact, the courts are even more loath to set up their judgment as to the fact against the judgment of the legislature. So we find certain principles well established.

Whether it is expedient or wise for the legislature to grant authority to take property for public use is purely a political question and one solely for the legislature.

But whether the use to which it is sought to appropriate the property authorized to be taken is a public use, is ultimately for the determination of the courts.

There is a strong presumption that any legislative act is valid which can be rebutted only by showing that the act is unconstitutional beyond a reasonable doubt. In the case of an act that authorizes the taking of land by the right of eminent domain, the presumption is unusually strong that that purpose is in fact public and that the legislative act is constitutional, as the question is one of fact.

If the land is being taken for a purpose which is a public use, the method by which that use is to be acquired is solely for the legislature. If a mere easement or restriction is sufficient to accomplish the purpose, but the legislature chooses to give authority to acquire a fee simple, the courts have no jurisdiction to interfere.

This point is the crux of one of the two questions before us, and I therefore refer to illustrations.

It has long been recognized that taking of land for the right of way of a canal is a taking for a public use. But the

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right of way alone is all that is required for the purpose. The State of Pennsylvania, however, granted a canal company the right to take land in fee simple by eminent domain. It did so and later abandoned the canal and sold the property it had acquired. Generally in such cases, the public use having ceased, it is held that the property reverts to the former owner. It was argued that the same rule applied here. But the legislature having authorized the acquisition of a fee simple, the courts held that a fee simple was acquired and could be transferred.¹

In the city of Brooklyn there was a case which presented the reverse view of the principle. Less was taken than is usual and objection was made on that score. It was proposed to widen a certain street twenty feet on each side, but instead of adopting the usual method of condemning such additional ground and throwing it into the highway, the legislature approved a plan of acquiring merely an easement over the additional twenty feet, which space was to be "preserved as ornamental court yards." This easement in legal effect prevented the land owner from building upon the twenty feet. That space was left in the control of the owners except that this restriction of servitude in favor of the public was placed upon it. It was argued that this was neither fish, flesh, nor fowl, that it was not taking the property for a public use because the public would not actually make use of this twenty feet. The Supreme Court of New York, in an opinion approved by the Court of Appeals, held that to widen a street twenty feet on each side in order to beautify the street was a public use; that, this being so, it was entirely for the legislature to say whether or not that control should be acquired by means

¹ The cases are not referred to in this paper. A brief with full citations, prepared by the writer, may be found in Senate Document No. 422 of the 61st Congress, 2nd Session, entitled "City Planning, Hearing before the Committee on the Dist. of Columbia, U. S. Senate." It can be obtained on application to the Senate Committee on Printing.

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of a fee simple, by means of the usual right of way, or by means of an easement in the individual case. With that method the legislature has nothing to do so long as the use is a public use.

There has been no successful attempt to frame a definition of the term "public use" other than that the exercise of eminent domain shall be for the public good. "Such a definition should comprehend not only all the existing public purposes justifying such a proposition, but should anticipate the future exigencies of society, demanding new laws, and varied exercise of the protecting and fostering aid of the State." These "uses . . . are being enlarged and extended with the progress of the people in education and refinement. Many things which a century ago were luxuries or altogether unknown, have now become necessities. It is only within a few years that lands have been taken in this country for public parks." "The growing necessities of a progressive age must be met by the exercise of the State's power of eminent domain; the public road appropriates the bridle path; the turnpike road, the public road; the electric railway, the turnpike road; the steam railroad, the canal bed."

If there is a public need that a new street shall be opened to connect directly distant parts of a city, and if in order to carry out that improvement the city must have financial aid that can only be secured through the power of purchase and resale, and if, as a practical proposition appealing to the community in its business and corporate aspects, it is impossible for the city to undertake the construction of the street unless it has such power, is the granting of the power for a public use?

This is the form of the power that is frequently exercised in European cities. Are our cities impotent to receive and our legislatures impotent to give the power constantly used by foreign cities? Are the cities of the United States to be unable to undertake great improvements that will benefit the entire community? Is the fear of the judiciary that

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graft may be involved in such power to prevent them from seeing the public use of the power from the practical point of view?

There is no question in my mind that at the present time the majority of the courts of this country would answer that such power may not be given. The public regard such a proceeding as speculation in land. The courts seem ready to regard it as taking property from one man to transfer it to another, ignoring the interest of the public in the public betterment that would be thereby secured. A campaign of education of our fellow human-beings who happen to be judges must be undertaken. The judges must be brought to see the real necessity of the power, and to realize that the greatest good of the greatest number demands its exercise.

If the foregoing question must be answered in the negative at the present time, must the same answer be given where the exercise of the power of eminent domain is for the purpose of realizing the full benefits in all respects of new streets, parks, and places of recreation by adequate control of their surroundings?

Whether or not the control of the surroundings of a park or parkway can be secured through the direct exercise of the police power would seem to have been answered in the negative with much appearance of finality. For the exercise of the police power no compensation is given to individuals. It appears by the very great weight of authorities that exercise of the police power for this purpose is unconstitutional. Certain recent decisions cast doubt on these decisions and show the effect of education, as, for instance, education as to the bill-board evil. But for immediate practical purposes, the police power must be regarded as the wrong method of securing such control.

The object is to be sought by the exercise of eminent domain either by acquiring an easement, or, if the legislature so elects, by acquiring a fee simple and reselling under building restrictions. It has been held in a number of cases that the preservation or improvement of a park

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by adding to it rights in light, air, and view, compensation for the acquisition of the easement being provided, is a public use. Esthetic purposes have been held to be a public use. The condemnation of land for the sole purpose of adding ornamental strips to an avenue has been held a public use.

The Supreme Court of Massachusetts has declared that "there might be a public park intended to be kept open for prospect, air, and light, or as a protection against the spread of fires, or for other purposes, and not intended to be entered upon and used by travelers."

So it has been held by the same court that a road laid out "with the design to provide access . . . for the public to points or places . . . esteemed as pleasing natural scenery" is for a public use. Here the purpose was purely an esthetic one. Other cases are cited in the brief referred to in an earlier note.

The well-known Copley Square case is one that is worth mentioning. The Westminster Chambers were decapitated in order to preserve the light, air, and view of the square, and the action was held to be one for a public use.

The broadening modern view is well illustrated by a recent opinion of the Supreme Court of the United States, where, speaking for the court, Justice Holmes said: "The legal conception of the necessary is apt to be confined to somewhat rudimentary wants, and there are benefits from a great river that might escape a lawyer's view."

It is not necessary to argue concerning the benefits to health that may be derived from proper control of the surroundings of a park or parkway. A parkway one hundred and fifty feet wide, with four or five story buildings fronting upon it, will bring sunshine, light, and air to all who use it, while one of the same width with buildings thirty, forty, and fifty stories high on each side, a dark, damp, deep cañon, can bring but ill health and unhappiness to its denizens.

A recent opinion of the Supreme Court of Massachusetts to the legislature has been regarded as denying the validity

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of acts authorizing the acquisition of easements in this way. I do not see how a different opinion could have been given unless the power enjoyed abroad was to be given to Massachusetts. It was proposed to take the excess land for no purpose other than to induce and permit a use of it by traders and merchants. This clearly was not for a public use unless to save money is to be regarded as a public use. The use was not a public one except for that reason and the opinion cannot be cited against the present proposition, viz.: to acquire excess land in order to preserve the light, air, beauty, and health of a parkway or similar improvement.

If, as it is submitted the foregoing discussion shows, the protection of a park or parkway and its environs and the preservation of the view, appearance, light, air, health, and usefulness thereof is a public use, it is for the legislature to determine whether that protection and preservation can better be secured by acquiring appropriate easements, or by acquiring fees simple and reselling with appropriate restrictions; and the courts have no jurisdiction to interfere with the legislature's determination of that question.

I am of opinion that the acts passed by a number of the legislatures of the country giving the power of acquiring property within a reasonable distance of a park, parkway, or playground in order to resell with such restrictions, will be held to be a public use. I am convinced that it would be unwise at the present day to attempt to pass acts designed to acquire such property for financial reasons. The public and the judges must be educated, and the best means of educating them is to get them to see the necessity of condemning for limited purposes, first, as, for instance, for the preservation of the health-giving power of a park and of its light, air, and beauty, before the broader power is brought before them for judicial determination.

This broader power has been given in principle and has been exercised, without, however, a decision of the courts on a contested case. Park Commissions have been given authority to acquire entire tracts of ground when portions

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only have been required, the excess to be resold. The mere fact that a small triangular or other irregularly shaped piece of property would be left if this power were not delegated, does not differentiate it from the broad power to take merely for financial reasons, and I am persuaded that it was a financial reason that really induced the legislatures to give this partial power. This reason, broadly put, is that when the larger part of a property is to be acquired the jury of condemnation gives the claimant the value of the whole, and it has been my personal experience and observation that a good deal more than the real value of the entire tract is awarded; and the legislature thought it wise that when a city has to pay in fact the value of the entire tract, it should have the entire tract. While this power has, so far as I know, not been directly involved in litigation, it has been upheld in an opinion to the legislature by the Supreme Court of Massachusetts.

It therefore appears that the power of eminent domain may be given to cities to acquire land abutting on that needed for a public improvement in order to resell the same with proper restrictions so that the full benefit of the improvement may be secured by the community. It further appears that (because of the human aptitude of jurors to give the value of the entire tract when a small portion only is left) the power to condemn in conjunction with entire properties small irregular triangular sections not needed for the improvement, is a public use. It also appears that if the sole object of an act were to save money to the city, or, as its enemies put it, to enable the city to speculate in land, by giving unlimited power to condemn in excess of the necessity, in order to resell, the act would now be held unconstitutional. But the final definition of what is a public use has not yet been determined. If the matter is approached gradually, it may be that the power to resell when necessary to carry out central reconstructions of our cities may be held valid. And the power to take these triangular pieces of land may well be the entering wedge.

THE PROBLEM OF EXTENDING THE CITY PLAN

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IN treating of any subject relative to city planning it has grown to be almost a custom of late to discourse on reconstruction in contradistinction to pure construction, or, in other words, on the internal altering of our cities. So it is well to mention in the beginning that this paper is intended to deal briefly with some of the problems involved around the borders of the civic domain, and not with the oft discussed though highly important questions relative to civic centers, the grouping of public buildings, "hub" treatments, and the like.

It needs very little consideration to show us the importance of adhering to some well regulated plan for our new sections, for the real gist of the whole matter is that if proper supervision is not exercised at present, the near future will present additional problems similar to those which now confront us in our congested and badly arranged built-up sections. This idea of planning, however, does not seem to meet with as much enthusiasm in our growing towns as the policy of reconstruction which I have mentioned.

In Baltimore we have accomplished a little along these lines, and by the help of intelligent study it is hoped that new ideas will aid us greatly in this important feature of city planning. In 1888 Baltimore incorporated within its boundaries about seventeen additional square miles of territory which was mostly in a very rural state of development. A Topographical Survey Commission was soon afterwards

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appointed and was directed to make a topographical map of the new area, officially called the Annex, as well as that of the old city proper. This map was made on the scale of two hundred feet to the inch with five feet contour intervals in sections of one square mile each, and is generally considered an excellent example of this kind of work. It has of course proved invaluable from an engineering point of view for a study of proposed plans for public improvements. The next step was then to adopt an official plan for the extension of new streets. One factor that governed the plan to quite an extent was the existence of the old plan of the County Commissioners. Previous to the annexation these Commissioners had laid down on an officially adopted plan many streets, extensions of those in the old city, which were, following the usual custom of the time, laid out according to the unsightly gridiron method. The northeast corners of these streets were marked on the ground by stone monuments, and it was thought advisable at the time to adhere to a certain portion of the old system. The effect the actual marking on the ground of streets has upon property owners is very noticeable. Whereas, of course, this mere placing of stones in no way dedicates the street for public use, it seems, nevertheless, to impress the property owners with the idea that the streets will actually become opened on the ground at some future period. I know of no simpler or better method to induce a proper respect for a street plan than the placing of such monuments on the ground. This has not been done over our entire area in Baltimore, but it is very noticeable in sections which are so marked that our troubles in enforcing the plan are much fewer.

The Baltimore plan was in due course adopted by the Mayor and City Council, and subsequently the General Assembly passed an act which in substance prohibits the city from accepting the deed or dedication or the opening in any manner of any street which does not conform to the general plan, or the plan duly amended. This would seem

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to give the authorities the upper hand and a good deal of power, but as a matter of actual experience our control has been rather weak. This is due mainly to the long established prejudice of the property owners, who so often prefer to lay out their property along what they consider economic lines and maintain the streets as private thoroughfares or, as is usually the case, to leave this burden to the future lot owners. This state of affairs is difficult to remedy, for if we prohibit development except along lines desired and suggested by the city, we seem to be encroaching on the old bugbear of personal liberty.

To summarize, then, we may state that Baltimore has a decent sort of plan which can be further improved and remedied by the adoption of amendments when desired. These amendments must, however, be approved by the Topographical Survey Commission referred to, and adopted by the City Council before they can be incorporated in the plan. This is a wise precaution inasmuch as it prevents an indiscriminate altering of the plan for trivial or immaterial reasons. Again, the city is restricted from assuming the jurisdiction over any street which does not conform both to the lines and grades of the general plan. These are practically our limitations in the governing of new lay-outs, and we have tried to make the best of them by the use of persuasion, compromise, etc.

We need many additional powers to govern the annex, and these may be grouped under the following:

First, directing improvements in undeveloped territory along lines and grades in conformity to the general plan.

Second, prevention of further improvements along streets already laid out, but which do not conform to the general plan.

Third, prevention of building in the beds of proposed streets which are laid down on the general plan, and which in due course will actually become opened.

In the first problem, we have, to a certain extent, a clear

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field with the twofold object of preventing the erection of buildings in the beds of streets laid down on the plan, and of prohibiting the opening of streets other than those laid down on the plan. I believe both of these conditions are impossible to prevent if property owners really insist upon them. But it is possible, indeed, it can very frequently be done, to throw so many obstacles in the way of those desiring incongruous lay-outs as to make the game hardly worth the candle. Two obstacles frequently used are the refusal on the part of the city to lay water mains or sewers, or provide any public improvements whatever, in the beds of proposed streets laid out contrary to the city's wishes, and the refusal to pay damages for houses built in the beds of established or proposed streets. These would aid greatly in tending to promote a proper respect for the plan.

A concrete instance occurred in Baltimore very recently which illustrates very well the importance of providing as many safeguards as possible to prevent owners from indiscriminate lay-outs. The owner had laid out his property in direct opposition to the general plan which had been followed or was in course of being followed by his neighbors on three sides. The property had just recently been bought and no improvements or plans whatever had been made regarding it, so that the only excuse for departing from the established plan was simply that of molding the lots in accordance with the outlines of the property. Every effort was made to persuade the owner to conform to the established plan, but to no avail. We then tried to block the inharmonious plan by the opening by condemnation of one of the established streets of the general plan. But before this could be put in actual operation the wary owner had erected a number of houses in the bed of the city's proposed street, and the condemnation would have been too costly for the benefit derived; at least, such was the view held by the authorities. So the city is at present left with an unsightly patch in the midst of a section built up along properly laid-out streets.

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Right here would have been an excellent opportunity for the enactment of the "no damage" provision I have mentioned. But the mere fact of this street being located on an official plan of the city does not seem to have sufficient weight with our local courts to prevent buildings being erected within its lines, or rather of withholding compensation for such buildings.

In Philadelphia, the authorities in such cases simply refuse to give the builder the lines and grades on such non-conforming streets, and as this data is necessary in order to get a permit to build, it is readily seen the hold the civic authorities have on the promiscuous builder, and so far this action does not seem to have been contested. But in Baltimore our legal department has ruled that we cannot withhold a permit on these grounds.

Thus far no water mains have been laid within the bed of this nonconforming street, but application will, no doubt, soon be made for this purpose, and this will present an interesting question, the solution of which will be of much importance for the control of our local street plan. For it is highly probable in this instance, that should the civic authorities refuse, as will most likely be the case, to lay the main as requested, the owner will then endeavor to get permission to do the work at his own expense, and it is very doubtful if the authorities will be able to deny him this privilege. This problem would appear to be one of more than local importance, but it may be the case that other cities have found different methods for withholding water connections in cases similar to the one I have just mentioned.

The second problem, that of preventing the erection of additional houses along streets already laid out prior to the adoption of the plan, but which do not conform thereto, is one that presents many more obstacles for its solution. It often works rather a hardship on the property owners to change their old plans and conform to the new ones. Often though, in such cases, by diligent application of proper

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treatment, a satisfactory compromise can be effected and the old plan be meliorated into that of the modern idea.

Sometimes, however, drastic measures must be taken to eliminate unsatisfactory conditions, and these may often take the form of opening some important thoroughfare, making it highly desirable for the owners to conform in a manner to the new conditions. In such instances, it is, of course, desirable for the municipalities to buy up considerable property around the new improvement and dispose of it in conformity to the new lines.

The third problem, that of preventing building in the beds of proposed streets, also presents many difficulties. Many cities seem to prevent this by a form of dedication shown on their plattings, and of not allowing damages for new improvements made when such streets shall actually become opened on the ground. There is a doubt, though, held by many municipal authorities whether such action is entirely legal, and many cities exercise this power by simply high-handed methods.

In Pittsburg, for instance, they have a method of merely "locating" a street by ordinance, and the courts have apparently upheld the validity of this act in refusing to allow compensation for buildings destroyed in the actual condemnation, provided, of course, that the buildings have been erected since the passage of the ordinance. But as this location ordinance in no way guarantees that such a street will ever become actually opened on the ground, this would not seem to be a very satisfactory method. Also, such an ordinance may be repealed at any time, so that the property owner is in a way up in the air as to the intentions of the authorities.

In dealing with this third problem Boston endeavors to handle the proposition by recourse alone to the provision I have mentioned several times before, that of refusing to lay water mains, etc. And the Act of the Massachusetts legislature prohibits in very precise language the placing

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of any public work whatever in the beds of nonconforming streets.

In the original statute governing this question in Boston, it was provided, in substance, that if any owner should place any building in a street platted by the Board of Survey, no damages would be allowed for the improvement, but this has been declared unconstitutional by the State Supreme Court. The Maryland Court of Appeals has also rendered a decision against the no damage provision.

Before closing this paper I think it well to touch in a general way on a subject I deem of great importance to my own city at the present time, and which might also be adopted by other cities. I refer to the co-operation with our neighbors on our immediate boundaries in order that the development may be in a manner symmetrical with that which has already taken place within the boundaries of the city.

Milwaukee, for instance, has taken several progressive steps in the direction of planning for what will probably one day be a consolidation of the city proper with a group of separate outlying communities. But its energy seems to have been directed more along lines of public health and safety than among those civic functions relative to the street extension system.

Our idea in Baltimore at present is first to form a co-operation between the city and the adjacent counties and to map a considerable territory surrounding our present boundaries, and with this as a basis to enter into agreements for an harmonious extension of the street system, and for the various related problems. As a foundation for such street extension to the outlying communities Baltimore will soon possess a number of modern improved roads. These roads were formerly the old turnpikes serving as the main arteries of travel from distant towns to the heart of the city, and they have from their natural bent followed the straight and, unfortunately, the narrow path. But when improved along modern ideas of width, grade, and alignment, they

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will form a sort of radial mainstay for the construction of the suburban framework. Indeed, they will, in many cases, have the appearance of up-to-date boulevards, for the idea of beauty in their improvement has not altogether been disregarded, and when completed, they will, in many cases, be good examples for a detail of the twofold idea for a "City Beautiful" and a "City Sensible."

THE COMMISSION ON THE CITY PLAN AT HARTFORD, CONNECTICUT

FREDERICK L. FORD

City Engineer

WHILE Hartford may not be the first city in this country to establish a permanent commission on the city plan, it is one of the first, if not the first, to have one created by legislative authority, and its charter contains several interesting features which other American cities can well afford to adopt.

The legislative body of Hartford consists of two boards, the senior, known as the board of aldermen, with twenty members presided over by the mayor, and the junior body, called the common council board, consisting of sixty members.

The administrative work of the city is performed by various bi-partisan commissions, each consisting of six members, three from each of the two leading political parties. Each year the mayor appoints two representatives, one from each party, to hold office for a term of three years, or until their successors are elected and qualified. Under this plan any mayor can, if his appointees are loyal, and in entire sympathy with his policies, gain control of each of the appointive commissions one year after election with the appointment of the second two men.

Previous to the creation of the commission on the city plan, the court of common council and the board of street commissioners were the only bodies which passed upon or had anything to do with the lay-out of the streets.

In preparing the charter amendment for this new com-

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mission it was desirable, from every point of view, that it should, first of all, be a representative body which the other commissions and the citizens at large would have absolute confidence in and respect for, and, secondly, that it should, as far as possible, be removed from any and all political influence.

The original resolution passed by the Connecticut General Assembly in January, 1907, providing for a commission on the city plan for Hartford, is as follows:

SECTION 1. That there shall be in the city of Hartford a commission on the city plan, which shall consist of the mayor, who shall be its presiding officer, the president of the board of street commissioners, the president of the board of park commissioners, the city engineer, two citizens, neither of whom shall hold any other office in said city government, one member of the board of aldermen, and one member of the common council board, to be appointed as hereinafter provided.

SEC. 2. The necessary expenses of said commission shall be paid by the city, but no member thereof shall be paid for his services as such member.

SEC. 3. During the month of April, 1907, the mayor shall appoint one citizen member of said commission to hold office for two years, and one citizen member to hold office for three years from the first of May then next ensuing, and in the month of April, 1909, and in April in the years thereafter when the terms of such citizen members respectively expire, the mayor shall appoint one citizen member of said commission for the term of three years from the first day of May then next ensuing. During the month of April, 1907, and in each April thereafter, the board of aldermen and the common council board of said city shall each appoint from its own number a member of said commission to hold office for the term of one year from and after the first day of May then next ensuing. The members of said commission shall hold office until their respective successors are elected and qualified.

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SEC. 4. All questions concerning the location of any public building, esplanade, boulevard, parkway, street, highway, square, or park shall be referred to said commission by the court of common council for its consideration and report before final action is taken on such location.

SEC. 5. The court of common council may refer to said commission the construction or carrying out of any public work not expressly within the province of other boards or commissions of said city, and may delegate to said commission all powers which the said council deems necessary to complete such work in all details.

SEC. 6. Said commission may make or cause to be made a map or maps of said city, or any portion thereof, showing locations proposed by it for any new public building, esplanade, boulevard, parkway, or street, and grades thereof, any street, building, and veranda lines and grade thereon, or for any new square or park, or any changes by it deemed advisable in the present location of any public building, street, grades and lines, square or park, and may employ expert advice in the making of such map or maps.

SEC. 7. Said City of Hartford, acting through said commission or otherwise, shall have power to appropriate, enter upon, and hold in fee real estate within its corporate limits for establishing esplanades, boulevards, parkways, park grounds, streets, highways, squares, sites for public buildings, and reservations in and about and along and leading to any or all of the same; and, after the establishment, lay-out, and completion of such improvements, may convey any real estate thus acquired and not necessary for such improvements, with or without reservations, concerning the future use and occupation of such real estate so as to protect such public works and improvements and their environs, and to preserve the view, appearance, light, air, and usefulness of such public works.

An amendment to this charter was obtained in 1909 providing that the superintendent of public parks should

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also be a member of said commission, thus making nine members.

From a study of its charter, the difficulty of gaining political control of the commission on the city plan is apparent. It would involve control of both legislative branches of the city government and all of the city commissions represented on the commission.

I expect the outside opinion formed from the two reports thus far issued would be that the commission had been rather inactive. It is somewhat difficult to introduce a new commission into any city where the administrative work is being performed by several commissions covering practically the entire field of endeavor and working satisfactorily. Each has certain well-defined rights and prerogatives, and a new commission with similar authority is liable to overlap into the field of other commissions and cause trouble, unless the work of the new commission is cautiously planned to avoid such conflict.

As a general rule new matters originating in the council are now first referred to the commission on the city plan for investigation and report. Their recommendations are reported back to the council and then referred to some regular city commission for definite action. If the matters relate to the lay-out of streets, the board of street commissioners proceeds with the preparation of the customary descriptive lay-outs in accordance with the city charter, and along the lines recommended by the commission on the city plan.

In accordance with section six the department of engineering is now preparing topographical maps of the outlying sections of the city, preparatory to the lay-out of streets over all undeveloped areas. The city of Hartford intends to lay out such streets over every undeveloped acre within the city limits, even though no physical work may be done upon them for the next two decades. Care will be taken to see that they harmonize with the older existing streets, and that provision regarding the width of all streets

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shall, as far as possible, anticipate the uses which such streets will later be subjected to.

Hartford, like many American cities, has suffered from the destructive work of outside real estate speculators who have purchased areas within the city limits and subdivided them with little or no reference to the lay-out of adjoining city streets or the customary or proper size of building lots. To avoid this practice, which did more than anything else to injure the development of our street system along rational lines, the following ordinance was passed:

SECTION 1. No street platted or opened by any private persons, firm, or corporation shall hereafter be accepted by the court of common council until the petition for same with plot or plan showing proposed location of such street or highway, and its width shall have been referred to and approved by the commission on the city plan.

SEC. 2. The town clerk shall, upon the filing in his office of any such plot or plan showing lay-out of any such proposed highway or street, immediately send to the party so filing such plot or plan a copy of this ordinance.

This enables the commission to determine the location, width, and direction of all streets, and incidentally to control the size of building lots and city blocks, as the owners usually are reluctant about carrying out any plans in opposition to the commission's advice, which might later imperil the acceptance and maintenance by the city of their proposed streets.

The clause in the charter of the commission which will undoubtedly most appeal to you is the last one. This is a very broad charter provision, and some will undoubtedly question its constitutionality as an encroachment on individual property rights. Thus far we have had no occasion to test it, but if it is held to be constitutional it will undoubtedly prove to be the most valuable feature in the charter provision.

While the commission on the city plan of Hartford is especially well organized and working under a charter

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amendment which we consider possesses many distinctive advantages, I have often wondered whether its powers should or should not be extended to include such duties as are now performed by various art commissions in American cities, and its personnel include possibly a painter, an architect, and a sculptor. I should like the advice of those present on this feature.

Messrs. Carrere & Hastings of New York City have been retained as expert advisers of the commission, and it is hoped and expected that within the next year a definite plan will be made and a report issued upon the future development of the city of Hartford along intelligent and comprehensive lines.

THE ENGLISH TOWN PLANNING ACT OF 1909

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THE course of town planning in the United States and England offers a most instructive comparison. In our cities sentiment in favor of a more orderly city growth is so strong that the city of any pretension without its enthusiastic "Improvement Committee," is fast becoming an anomaly. This sentiment, however, has had little or no expression in our body of laws, with the result that much energy has been wasted. In England legal enactment in the shape of Town Planning Act of 1909 has preceded sentiment, which even in the largest cities is much in need of stimulation.

A detailed analysis of the act is at this time unnecessary, but it may be of value to outline the most important provisions from the point of view of our own difficulties.

The act is Part II of the Housing and Town Planning Act of 1909. Thus there is official recognition of the idea which needs more emphasis in our town planning, — that there can be little effective housing without town planning, that town planning must include a careful study of the housing problem, that both town planning and housing are essentially interdependent.

In conferring exclusive authority on and centralizing administrative powers in the local government board, the act carries out to an extreme unlikely under our system of government the principle that successful city planning is dependent on an administrative organization which shall

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have wide power and sole authority over all questions relating to the city's physical development.

The language of the act is to be interpreted by the local government board. It will have the duty to construe the *object* of the act expressed in the words: "to secure proper sanitary conditions, amenity, and convenience with the laying out and the use of the land and of any neighboring lands." Such language is of course capable of a very narrow interpretation, but it may be confidently expected from the composition of the central body, from the staff of expert advisers which it has already secured, that a construction as broad as possible within the limits of a necessary economy will be given the act. That this is not a mere prophecy is indicated by the fourth schedule of the act, which definitely provides that the local government board shall make regulations for streets and highways; buildings; open spaces, private and public; sewerage; lighting; water supply, or, in other words, a comprehensive scheme for a city's development. The actual preparation of a town planning scheme is left entirely within the control of the local government board. Any proposition on the part of property owners or local authorities must be submitted to it, and only on its approval does the scheme become official.

Before such approval, opportunity is given for objections, amendments, or revocation of an already adopted scheme. The board will not give this approval unless satisfied that there is a "prima facie case" for making such a scheme. Just what a "prima facie case" is, has given rise to much discussion, but a most significant and satisfying suggestion to American planners is that such a case may be found in The Boston Metropolitan Improvements Commission Report of 1909. The emphasis is laid in all the discussions of the "prima facie case" on the necessity of co-operation between the different administrative bodies, such as was manifest in the Boston report, and of central supervision by experts in the employ of the local government board.

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The local government board also determines the limits of the land which shall be included in the town planning scheme. The expression in the act is "Land likely to be used for building purposes, which purposes shall include not only land necessary for the erection of buildings," but such as may be used for open spaces, roads, streets, parks, pleasure, or recreation grounds, and the decision of the local government board whether land is likely to be used for building purposes or not, is final. In thus defining the area of the town planning scheme the board has also the power to suspend any regulation, statute, or by-laws in force over the area. The proverbial rigidity of the English by-laws thus gives place to a flexible system which is infinitely better adapted to the peculiar and different conditions of each area. As it is with the English by-laws, so it is with some of our municipal codes, and a provision which recognizes different local conditions might well be adopted in our municipal regulations.

The entire procedure under the act is regulated by the local government board. Some of these regulations appear in the fifth schedule, and for the most part are merely formal requirements. But in addition to formal regulations a clause in the act specifically provides that the board by regulation shall secure the co-operation on the part of the local authority with the owners and other persons interested in the land at every stage of the procedure, by means of conferences and such other means as may be subsequently provided. This is just the sort of thing that is being unofficially done in every city of the United States that is making progress in city planning, particularly in connection with the extension of the city plan into undeveloped areas. It is as true in the United States as in England that much of the larger development of the land is dependent on real estate operators, and it is certainly a most sane provision which aims to secure the co-operation.

Ample power is given the board to enforce the execution of the scheme. Although the local authority has the power

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to condemn private property which includes the power of removing, pulling down or altering any building not in conformity with the scheme, it is the board sitting as arbitrators which decides whether any building or work contravenes the town planning scheme, and the decision of the board is final and conclusive and binding on all persons. In the same way the board decides whether there is any failure or delay in the execution of the scheme, and after its decision the local authority proceeds to execute.

In all questions of compensation the local government board again by its power to appoint a single arbitrator, unless the parties agree on some other method, has control of the question whether any property is injuriously affected within the meaning of the act. The clauses relating to compensation are peculiarly interesting, in view of the fact of the recent activity along these lines in some of our cities. The principle of excess condemnation has been carefully presented to the conference, and the opinion of the Massachusetts Supreme Court in relation thereto. The English act cuts the Gordian knot by providing that the local authorities shall be entitled to recover from any person whose property is increased in value by the operation of the scheme one-half the amount of that increase. Thus does the municipality reap the benefit without any of the risks attendant on speculation in land values. A provision already familiar in some American cities withholds compensation for any building erected on land included in the scheme after the time at which the application for authority to prepare the scheme was made. Our courts have held almost universally that an exercise of this right was a taking of property which must be compensated for.

The act contemplates action. If local authorities are laggards, if property owners fail to grasp the opportunities which ought to appeal to their civic pride, if delays in execution of an adopted scheme are found unwarrantable, the local government board by mandamus may force the local authority either to prepare a scheme, to adopt one

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which has been approved, or to execute forthwith the scheme adopted. The expense of carrying out the scheme is to be met by loans which are not to be reckoned as part of the municipal debt for the purpose of determining the debt limit.

The events which followed rapidly after the passing of the act dissipated any doubt of the value of the measure. On December 10th, seven days after the act became law, the first conference of the Garden City Association was held to discuss the practical application of the act, and four days later the National Housing and Town Planning Council met for the same purpose. There is much that is profitable in these discussions. The faults, as well as the merits, of the bill were fully considered, but perhaps the most interesting thing done was the appointment of a so-called "advisory committee" composed of town planning experts, architects, members of town councils, and large property owners, whose business it is to watch the working of the act, to offer suggestions both to the local government board and the local authorities, to report cases where town planning is needed, but where no sentiment for it exists.

Local conferences are being planned, local committees are being formed; the local government board is at work on the regulations which the act calls for. Prophecy is valueless, but judging from the interest shown by municipal officials and by the orderly way in which those interested are proceeding, the act begins a new era in English town planning.



